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Technological Laboratory.**

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**TECHNOLOGICAL REPORT  
ON  
STANDARD INDIAN COTTONS,  
1938**

BY

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## PREFACE.

THE term "Standard Indian Cottons" is applied to certain improved varieties of cotton which are steadily replacing the older varieties in different parts of India, and which, at present, cover over 17 per cent. of the total area under cotton cultivation. It is the practice at the Technological Laboratory to subject these cottons of each season to a very thorough test for their fibre-properties and yarn characteristics. This Bulletin contains the detailed results of these tests on standard cottons of 1937-38 season, together with the results for the previous seasons. It also gives the Agricultural Details, the Grader's valuation reports and the Spinning Master's report on each cotton as well as complete information regarding the treatment, waste percentages, yarn-breakages and the physical conditions prevailing in the Laboratory. It should be noted in this connection that owing to want of space, the reports of the Spinning Master and the Grader are given only for the last 10 seasons, the previous ones being omitted. For the same reason the results of the fibre tests prior to 1929 and those of spinning tests prior to 1927-28 have been averaged and only the mean values are given. The methods and technique of fibre, yarn and spinning tests employed at the Technological Laboratory are described in the Technological Bulletins, Series A, No. 25 and Series B, No. 20, the latter bulletin dealing with the technique of maturity tests which were commenced in 1934-35.

In 1931-32 three cottons—one each from Bombay Presidency, Madras Presidency and U.P.—were omitted from these reports as they had either been replaced by superior types or gone out of general cultivation. In 1932-33, a U.P. cotton, K.22 was omitted because it failed to find favour with the cultivators, and a new U.P. cotton, C.102 was included. In 1933-34, two cottons, C.A.9 from U.P. and Hagari 25 from Madras Presidency were omitted from the list, the former because it was no longer grown on a commercial scale and the latter because it was replaced by Hagari 1. In 1934-35, four new cottons were included in these Reports. Two of these are from Sind, where as a result of the development of Sukkur Barrage, the area under cotton has increased considerably. The other two new cottons are further selections of the C.P. Verum 262 which have been evolved so as to give satisfactory results under special environmental and climatic conditions. The year 1936-37 saw the inclusion of a new Madras cotton, namely Koilpatti 1, which is superior to Karunganni C7 in regard to bud and boll shedding under untimely rains, is more vigorous and produces an earlier crop. The samples of the standard cottons are now being supplied in accordance with the recommendations of the first Conference of Scientific Research Workers on Cotton held in Bombay in 1937. The sources of these samples in the current and the past seasons are indicated in the Bulletin.

I have to acknowledge my great indebtedness to Messrs. W. Ellis Jones, C. P. Bramble and Varjivandas Motilal for their kindness in furnishing Grader's Reports, the Agricultural Officers for the supply of the samples of standard cottons together with relevant agricultural details, and the Spinning Masters (Messrs. R. P. Richardson and V. V. Gupte) and the staff of the Technological Laboratory for their co-operation in carrying out the tests and compiling the results described in this Bulletin.

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# Indian Central Cotton Committee Technological Laboratory.

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## Technological Reports on Standard Indian Cottons, 1938.

BY

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### I. INTRODUCTION.

*Indian Cotton Crop.*—The commercial cotton crop in India is composed of a great many varieties. Some of these are indigenous and have been grown in the country for a very long time, while the others are exotic and have been acclimatised by repeated cultivation and selection. These varieties differ considerably from one another as regards yield, ginning percentage, feel, colour, cleanliness, fibre-properties, spinning performance and yarn-characteristics. This is hardly surprising because, in a country of the size of India, the factors upon which the type and the quality of a cotton grown in any one area depend, i.e., the climatic conditions, the amount and distribution of rainfall, the composition and fertility of the soil, etc., vary considerably from one area to another. It thus happens that on the one hand India produces the coarse and short-stapled Bengals, which are suitable for 8/10's reeling only, and on the other, the fine and long-stapled Cambodia, which is capable of spinning upto 30's warp or 40's weft, while certain areas in the Lloyd Barrage, Sind, are suited to cultivation of long staple cottons which are capable of spinning upto 60's warp. The table on page 2 gives the production and the staple length of the Indian cotton crop according to trade descriptions, the blow-room loss sustained by each cotton and the types of yarns for which it is suitable. This table is based upon a note on the characteristics of Indian cottons prepared by a joint Sub-Committee of the East India Cotton Association, Ltd., Bombay, and Indian Central Cotton Committee which has been published under the title of "A Guide to Indian Cottons."

*Work of the Agricultural Departments.*—For many years the Agricultural Departments have pursued the policy of evolving new and improved varieties of cotton, which should be especially suited to the specific conditions prevailing in a given area. In this work they have been guided by the consideration that new variety should possess one or more of the following merits over the old one, which in due course should be superseded by the former in general cultivation. The new variety should either be less susceptible to attack by the particular disease or pest from which cotton in that area has suffered in the past, or it should give a bigger yield per acre and possess a higher ginning percentage as compared with the old variety. Or it should be characterised by possessing a longer and finer staple. Only if one or more of these conditions are fulfilled, can the new variety be confidently recommended to the farmers in the hope that it would give a better monetary return for their labours than the old variety. These are essentially the three principal directions along which improvement is aimed at by the Agricultural Officers engaged on selection and breeding of cotton.



*Standard Cottons.*—When the task of giving to the cotton breeders authoritative valuations on new types of cotton devolved upon the Technological Laboratory of the Indian Central Cotton Committee, it was realised that it would be necessary to select, as standards of reference, certain cottons, which should include a few types from each Province. It was necessary that, so far as possible, these should be grown under similar conditions from pure seed and should be available without interruption in the successive seasons. As these conditions were eminently fulfilled by the agricultural standards referred to above, which, besides, were steadily gaining ground in general cultivation, these cottons were adopted as the Standard Cottons for the purposes of tests undertaken at the Laboratory. It should be noted that these agricultural standards have no relation *whatever* with the trade standards maintained by the East India Cotton Association or the Karachi Cotton Association for purposes of appeal and arbitration. These trade standards refer to the different contracts under which transactions in cotton are regulated and the various standards under the same contract are prepared in regard to the degree of cleanliness and brightness of a cotton. The agricultural standards, on the other hand, are mostly botanically pure types which are selected with special reference to yield, ginning out-turn, fibre-properties and spinning performance. The following list gives the distribution of these standard cottons according to Provinces and shows for each cotton the season in which it was first tested at the Technological Laboratory and the area under its cultivation for the latest season. Ordinarily, the list of these agricultural standards remains unchanged for a considerable period of time, but when a cotton has definitely proved unfit for the cultivators' fields or has been superseded by a better variety, it is omitted from the list, and a new cotton is added to it, if, as a result of repeated trials, it is found suitable for general cultivation.

## LIST.

| <i>Cotton.</i>                               | <i>Season in which the cotton was first tested at the Technological Laboratory.</i> | <i>Area under cultivation under seed of known origin in 1937-38.</i> |
|----------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| <i>Bombay Cottons.—</i>                      |                                                                                     |                                                                      |
|                                              |                                                                                     | (Acres).                                                             |
| 1. Jayawant (Kumpta)                         | .. 1926-27                                                                          | .. 245,320                                                           |
| 2. Gadag 1 (Dharwar-American)                | 1923-24                                                                             | .. 74,300                                                            |
| 3. Surat 1027 A.L.F.                         | .. .. 1923-24                                                                       | .. 272,000                                                           |
| 4. Wagad 8 (Dholleras)                       | .. .. 1925-26                                                                       | .. (not known)                                                       |
| <i>Sind Cottons.—</i>                        |                                                                                     |                                                                      |
| 5. Sind Sudhar                               | .. .. 1930-31                                                                       | .. 46,930                                                            |
| 6. Sind N.R.                                 | .. .. 1929-30                                                                       | .. About 200,000                                                     |
| <i>Punjab Cottons.—</i>                      |                                                                                     |                                                                      |
| 7. Punjab-American 4F                        | .. .. 1924-25                                                                       | .. 1,034,800                                                         |
| 8. Punjab-American 289F                      | .. .. 1924-25                                                                       | .. 127,100                                                           |
| 9. Mollisoni (Bengals)                       | .. .. 1925-26                                                                       | .. 843,000                                                           |
| <i>United Provinces Cottons.—</i>            |                                                                                     |                                                                      |
| 10. Aligarh A. 19 (Bengals)                  | .. .. 1924-25                                                                       | .. 7,079                                                             |
| 11. C. 402 (U.P.)                            | .. .. 1931-32                                                                       | .. 1,987                                                             |
| <i>Central Provinces and Berar Cottons.—</i> |                                                                                     |                                                                      |
| 12. (a) Verum 262 (Nagpur)                   | .. 1926-27                                                                          | } .. 50,000                                                          |
| (b)     "     (Akola)                        | .. 1927-28                                                                          |                                                                      |
| 13.     "     434 (Akola)                    | .. 1933-34                                                                          | .. 43,360                                                            |
| 14. Late Verum (Nagpur)                      | .. 1930-31                                                                          | .. 16,960                                                            |
| <i>Hyderabad Cotton.—</i>                    |                                                                                     |                                                                      |
| 15. Umri Bani                                | .. .. 1924-25                                                                       | .. 840,840                                                           |
| <i>Madras Cottons.—</i>                      |                                                                                     |                                                                      |
| 16. Cambodia Co.2 (Cambodia 440)             | 1924-25                                                                             | .. 275,000                                                           |
| 17. Nandyal 14 (Northern)                    | .. 1923-24                                                                          | .. 4,360                                                             |
| 18. Hagari 1 (Western)                       | .. 1924-25                                                                          | .. 200,000                                                           |
| 19. Karunganni C7                            | .. 1924-25                                                                          | .. 80,870                                                            |
| 20. Koilpatti 1                              | .. .. 1936-37                                                                       | .. 39,440                                                            |

These officers, for their research purposes, had isolated certain improved varieties, which were grown each season *from pure seed under as nearly the same conditions as possible*, and were employed as standards of reference. New selections, made from time to time, were compared with these as regards hardihood, yield, ginning percentage, resistance to disease and pests, quality of staple, etc. These improved varieties also provided the means for undertaking various physiological, botanical or agronomical experiments by the Agricultural departments. Many of them had distinctive merits over the local cottons, and in course of time as the farmers became acquainted with them, their cultivation spread from the experimental farms to the cultivators' fields and they came to be recognised as an integral part of the Indian Cotton Crop.

### CHARACTERISTICS OF INDIAN COTTONS.

| Cotton<br>District. | Variety.                   | Production<br>in Bales. | Staple Length.    | How<br>Room<br>Loss (%). | Spinning<br>Performance.     | REMARKS.                                                                                           |
|---------------------|----------------------------|-------------------------|-------------------|--------------------------|------------------------------|----------------------------------------------------------------------------------------------------|
|                     |                            |                         |                   |                          |                              |                                                                                                    |
| CENTRAL PROVINCES   | United Provinces ..        | 100,000                 | Average 3/8"-5/8" | 9-11                     | 8's/10's reeling or weft     | *Marketed as part of Punjab Desi Crop.                                                             |
|                     | Rajputana ..               | 120,000                 | " 3/8"-5/8"       | 9-11                     | Do.                          |                                                                                                    |
|                     | Sind (Desi) ..             | 250,000                 | " 3/8"-5/8"       | 6-9                      | Do.                          |                                                                                                    |
|                     | Punjab (Desi) ..           | 725,000                 | About 5/8"        | 9-11                     | Do.                          |                                                                                                    |
| Total               | ..                         | 1,295,000               |                   | 7-9                      | 8's/10's reeling             |                                                                                                    |
| PUNJAB              | Braach ..                  | 275,000                 | 5 8"-6/8"         | 7-9                      | 11's warp, 18's weft         | Production mentioned is of roller-ginned cotton.                                                   |
|                     | Braach Farm ..             | 75,000                  |                   | 7-9                      | 20's warp, 21's weft         |                                                                                                    |
|                     | Dharwar (Saw-ginned) ..    | 25,000                  | 6/8"-7/8"         | 9-10                     | Upto 18's warp and 20's weft |                                                                                                    |
|                     | Punjab-American 1F ..      | 550,000                 | 3 1"-7/8"         | 8-10                     | 20's warp                    |                                                                                                    |
|                     | Sind-American 4F ..        | 75,000                  | 7/8"-15/16"       | 8                        | 26's warp                    |                                                                                                    |
|                     | Sind-American NT ..        | 50,000                  | 7/8"-1"           | 8                        | 21's warp, 32's weft         |                                                                                                    |
|                     | Punjab American 289F ..    | 10,000                  | 1"-1 1/4"         | 9                        | Upto 30's warp or 10's weft  |                                                                                                    |
|                     | Surat ..                   | 80,000                  | 7/8"-31/32"       | 6-7                      | Upto 20's/24's warp          |                                                                                                    |
|                     | Surat 1027 ..              | 50,000                  | About 1"          | 7-8                      | Upto 30's warp               |                                                                                                    |
|                     | Navsari ..                 | 25,000                  | About 1"          | 6-7                      | Upto 26's warp               |                                                                                                    |
| GUJARAT             | Wagad ..                   | 200,000                 | 3 1"-7/8"         | 15                       | 16-18's warp                 | Production includes about 30,000 bales of Banillas.                                                |
|                     | Lalia ..                   |                         | 5/8"-3/4"         | 12                       | 11's warp                    |                                                                                                    |
|                     | Borar ..                   | 600,000                 | 1 1/2"-6/8"       | 10                       | Upto 12's/11's reeling       |                                                                                                    |
|                     | Verun 262 ..               | 25,000                  | 7/8"              | 9                        | Upto 20's/21's warp          |                                                                                                    |
|                     | Central Provinces No. 1 .. | 200,000                 | Average 5/8"-6/8" | 7-8                      | Upto 12's/16's reeling       |                                                                                                    |
|                     | Central Provinces No. 2 .. | 150,000                 | Do.               | 7-8                      | Upto 12's/11's reeling       |                                                                                                    |
|                     | Central India ..           | 250,000                 | 5/8"-6/8"         | 11-12                    | Upto 11's/16's weft          |                                                                                                    |
|                     | Malvi ..                   | 10,000                  | 3/4"-7/8"         | 10                       | Upto 20's warp               |                                                                                                    |
|                     | Khandesh ..                | 350,000                 | Average 4/8"-5/8" | 9-11                     | Upto 10's/12's reeling       |                                                                                                    |
|                     | Mathia ..                  | 250,000                 | 5/8"              | 15                       | Upto 10's/12's reeling       |                                                                                                    |
| Total               | ..                         | 1,985,000               | 7/8"-15/16"       | 9-13                     | Upto 21's/20's warp          |                                                                                                    |
| WESTERN PROVINCES   | Westerns ..                | 200,000*                | 5/8"-13/16"       | 11-13                    | Upto 16's/20's warp          | *Production includes 40,000 bales 'Mungari'; 120,000 bales 'Jowari' and 40,000 bales Western Farm. |
|                     | Western Farm (Hugari 1) .. |                         | 7/8"-15/16"       | 10-12                    | Upto 21's warp               |                                                                                                    |
|                     | Northern ..                | 60,000                  | 7/8"              | 8                        | Upto 22's warp               |                                                                                                    |
|                     | Nandyal 14 ..              |                         | 7/8"-15/16"       | ..                       | 21's/26's warp               |                                                                                                    |
|                     | Coconadas ..               | 10,000                  | 5/8"-13/16"       | ..                       | 14's/16's warp               |                                                                                                    |
|                     | Kumtas ..                  | 160,000                 | 7/8"              | 11-16                    | Upto 22's warp               |                                                                                                    |
|                     | Jayawant ..                |                         | About 1"          | 12                       | 26's/30's warp               |                                                                                                    |
|                     | Gadag No. 1 ..             |                         | 13/16"-15/16"     | 7-8                      | 20's/24's warp               |                                                                                                    |
|                     | Cambodia ..                | 210,000                 | 7/8"-1"           | 6                        | Upto 21's/30's warp          |                                                                                                    |
|                     | Tinnevellys ..             | 90,000                  | 6/8"-7/8"         | 6-8                      | Upto 16's warp and 20's weft |                                                                                                    |
| TAMIL NADU          | Karungannis ..             | 80,000                  | 7/8"              | 6-8                      | Upto 24's warp               |                                                                                                    |
|                     | ..                         | 820,000                 |                   |                          |                              |                                                                                                    |
| GRAND TOTAL         | ..                         | 5,505,000               |                   |                          |                              |                                                                                                    |

sorter diagram for each cotton, which not only gives an idea of the relative proportions of fibres of different length-grades present in it but also shows any appreciable change in its mean fibre-length as compared with the previous season or the average of the earlier seasons.

(iv) *Spinning Tests*.—This section contains an account of the treatment given to each cotton, the Spinning Master's report on its behaviour, the waste losses sustained by it in the blow-room and the card-room, the number of yarn-breakages in the ring frame, and the results of tests on yarns spun from it for strength (lea, single thread and ballistic), actual counts, number of turns per inch, yarn regularity, evenness and neppiness. The physical conditions of humidity and temperature prevailing in the spinning room and the testing room are also given in the tables.

(v) *Remarks*.—The results of the two previous sections are summarised and discussed with special reference to waste percentages, quality of yarn and seasonal variation in the fibre-properties and spinning performance of the cotton.

*Size of the Sample*.—In a technological laboratory established with the primary object of testing annually a large number of samples on behalf of the Agricultural Departments and the trade, the normal size of a sample is a matter of considerable importance. The question, therefore, arises: "What is the *minimum* size of a sample required for a reliable test?" Before we can find a satisfactory answer to this question, we must consider two criteria which have direct bearing on this point. On the one hand, the size of the sample should be such that the results of the Laboratory test on a cotton should reflect its behaviour when spun in bulk under ordinary mill conditions. This is necessary, because, if a new cotton has to be recommended for general cultivation, the opinion of the spinner on its performance would have considerable weight in determining its value in the market and hence its popularity with the grower. On the other hand, the quantity required for the Laboratory test must *not* be so large as to hamper the cotton breeders in their work of developing new strains. The importance of the second criterion will be realised from the fact that the limited area at the disposal of a cotton breeder has to be parcelled out between a number of promising strains. Now, it takes a cotton breeder at least three years to grow a few pounds of lint of a *new* strain. Therefore, if he is expected to supply a large quantity, say 100 lbs. of lint of his selections for a spinning test, not only will he have to wait for several years before he is in possession of information regarding their spinning performance, but he will also have to discard, for want of sufficient area and other facilities, several of his strains which, on trial, may prove quite satisfactory.

In view of these two diametrically opposed considerations elaborate tests were made in the beginning on samples of different sizes, ranging from 100 lbs. to 1 lb. As a result of these tests it was found that, with the special technique employed at the Laboratory, a 10-lb. sample was sufficient for a satisfactory spinning test. Accordingly, this is the weight of a sample required for an ordinary test; but, as the standard cottons occupy a special position, duplicate tests on two 10-lb. lots are made on each of these cottons.

In judging the suitability of the size of a sample it should also be borne in mind that the normal routine of the Laboratory is specially adapted for handling and testing of small samples. Though the same machines are used as in a mill, the plant is small and the staff is trained for work of this nature; it is, consequently, possible to give close and individual attention to each sample in the various stages of manufacture of yarn. Although the samples are spun in rather more favourable conditions than those prevailing in a mill and are, therefore, likely to give somewhat higher performance, these conditions are perfectly definite and reproducible. When, as is often the case, the object is to compare the performance of two or more cottons, the size of a sample is of secondary importance, provided it is the same for all the samples which are spun under similar conditions. Where the performance of a single cotton

It will be noticed that already nearly 4½ million acres of land are under these improved varieties. Ten years ago, in 1927-28, the area under cultivation of standard Indian cottons amounted to only 2.33 million acres. The steady increase in this area and its present day magnitude are eloquent tributes to the intrinsic merits of these cottons, which have won a practical recognition from the shrewd cultivator, who will substitute a familiar with a new variety only if the latter pays him better in the long run. It should be remembered, in this connection, that part of the expansion in the area under these improved varieties has taken place in a period of severe trade and industrial depression when, owing to the accumulation of huge stocks of American and Egyptian cottons, the profits for cotton in general and the relatively longer types in particular have shrunk to extremely low levels. It is highly probable that in prosperous, or even normal, times the expansion in the area under these types, some of which represent India's best cottons as regards staple, would have been greater than that witnessed in the past decade.

*Scope of the Reports.*—On being received at the Technological Laboratory the standard cottons are subjected to a very thorough examination for their fibre-properties, spinning performance and yarn-characteristics. Small representative samples are drawn for fibre tests, while, two lots, weighing 10 lbs. each, are processed for the spinning tests. Each lot is spun by itself, and the yarns obtained from it are tested independently. The detailed results of these tests will be found for each cotton in the Technological Reports which comprise the major part of this Bulletin. Each report is divided into the following five sections.

(i) *Agricultural Details.*—These are, as a rule, supplied by the Provincial Agricultural Departments, and provide information regarding the history, the district of growth, the sowing and picking periods, the type of soil, the climatic conditions, various plant particulars, i.e., seed-weight, lint-weight per seed, ginning percentage, yield per acre of the seed cotton, and, finally, the area under cultivation in the different seasons. It should be remembered that the figures given under this section are either *averages* for several seasons or they are obtained under specified conditions. Care must, therefore, be exercised in drawing general conclusions from these figures as they are likely to vary considerably in the different seasons or under a set of different soil or climatic conditions.

(ii) *Grader's Report.*—This gives the Grader's estimate of the market value of each cotton and his opinion regarding its class, colour, staple length, staple strength and regularity, i.e., factors in terms of which the trade interprets the quality of a cotton.

In regard to the price assigned by the Grader to a cotton, it should be remembered that it does not depend, in all cases, *solely* upon the quality and grade of the cotton, but may be influenced, to some extent, by various other factors. These factors are (1) the supply of the type in relation to the competing types, (2) the existence of an abnormally high or low demand for the type, (3) the existence of a general or prolonged strike in the textile industry or the threat of a boycott from large scale buyers, (4) the operations of a syndicate of buyers or sellers, etc. The operation of these factors, either singly or in conjunction, may force the price of a particular type up or down. It is important not to lose sight of these factors, as otherwise any generalisations based upon the grader's valuation alone may be quite erroneous and misleading.

(iii) *Fibre-Properties.*—This section contains the results of tests carried out for the determination of the following fibre-properties:—mean-fibre-length (by two methods), fibre-length irregularity, fibre-weight per inch, fibre-strength (by two methods), fibre-strength per unit fibre-weight per inch, fibre-rigidity, ribbon-width, number of convolutions per inch and the percentage of mature, half-mature and immature fibres. The determination of fibre-rigidity, ribbon-width and number of convolutions has been discontinued from 1932-33, while the results of the maturity tests are given from the 1934-35 season. It also includes a

The fourth purpose served by these tests is to place in the hands of the trade detailed information regarding the standard cottons. Many of these cottons have been evolved after years of scientific research and represent improved types which are becoming more and more popular with the cultivators. It is hoped that the present bulletin, containing all the particulars required by a practical man, will help to give these cottons their proper place in the world's markets. It should be mentioned here that another bulletin, similar to the present one, is now published annually, which gives the results of tests on representative trade varieties, which form the bulk of the Indian Cotton Crop.

## II. DETAILS OF FIBRE, YARN AND SPINNING TESTS.

It has been customary in the past to give in each issue of this Bulletin full details of the machinery and the spinning technique employed in the spinning tests, of the apparatus and the methods employed in the fibre and the yarn tests and of the standards of yarn strength and twist adopted at the Technological Laboratory. The methods and technique of the routine tests must necessarily undergo very little change from year to year, as otherwise it would be difficult to compare the results obtained for the same cotton in the different seasons. Therefore, in order to avoid repetition, a full account of these has been published in another Technological Bulletin.\* The method employed for the determination of the percentages of mature and immature hairs is described in another bulletin.†

In connection with the fibre tests, it should be mentioned that the determination of fibre-rigidity, ribbon-width and number of convolutions per inch, for the standard Indian cottons, has been discontinued from the 1932-33 season. Statistical analysis of the data for nearly 150 cottons showed that the influence of any one of these properties on the spinning quality of a cotton was very small as compared to that of mean fibre-length, fibre-weight per inch or, to a lesser degree, fibre-strength; and that the additional information yielded by a knowledge of these properties with regard to the spinning quality of a cotton is incompatible with the extra time and labour involved in their determination. Accordingly, examination of fibres for these properties was discontinued, except in special cases, from that season. On the other hand, in view of the valuable information yielded by a knowledge of the degree of maturity of the cotton fibre, maturity tests have been made on the standard cottons since 1934-35. It should be also mentioned here that upto 1929-30 the fibre-weight was determined by weighing 1 cm. lengths of fibres. Since then, for reasons explained in another bulletin‡ it has been determined by weighing whole fibres. The latter method gives, on the average, about 10% lower results than the former, which should be remembered in comparing the values of this property. Furthermore, since the value of the fibre-weight per inch is used in the calculation of the intrinsic strength, a *negative* correction of about 10% should be applied to its values subsequent to 1929-30 to make them comparable to the earlier seasons.

## III. PHYSICAL CONDITIONS.

Each room of the Technological Laboratory is equipped with at least one thermo-hygrometer for taking a continuous record of the humidity and the temperature prevailing in the room. These thermo-hygrometers are checked every hour against a wet and dry bulb whirling hygrometer. Thus, complete information regarding the psychrometric state of the atmosphere in each room is available from day to day. It has been found that, over short period of time, variation in humidity and temperature is generally quite small in Bombay; though, of course, the average humidity is much higher during the rainy (monsoon) season than during the dry months. We know that such fibre-properties as weight, strength,

\* Technological Bulletin Series A, No. 25.

† Technological Bulletin Series B, No. 20: Fibre-Maturity in relation to fibre and yarn characteristics of Indian cottons.

‡ *Ibid.*

is to be considered, the results of the Laboratory test will still provide a useful guide to its performance in a mill. The only serious objection which can be levelled against using a small sample is that the scutcher lap may not be uniform and may, therefore, give rise to yarn which may not be representative of a large sample. This difficulty has been overcome by employing, in the preparation of the scutcher lap, a special routine which is described in another bulletin.\*

*Objects of the Tests.*—Tests on standard Indian cottons are undertaken with the following four objects. In the first place, since these tests are made in each season on the same varieties grown under as nearly the same conditions as possible, they serve to establish a scale of reference for the entire Indian cotton crop. For instance, we know, from the supplementary tests made for the trade, the performance of the commercial Punjab-American cotton grown in the districts in any one season. We also know from these Reports the performance of this cotton grown in the same season from pure seed on an experimental farm. By comparing the results of the two tests, we are in a position to determine the extent by which the commercial variety differs in quality from the pure cotton. If the difference is considerable, the next step would be to ascertain the causes which are responsible for it. If the two samples are not grown at the same place, allowance must, of course, be made for different environmental and climatic factors.

Secondly, since these tests are repeated in the successive seasons, the results obtained afford an excellent means for the study of seasonal variation in the fibre-properties and spinning performance of these cottons. This study of seasonal variation is valuable in two ways. In the first place, provided it is extended over a sufficiently long period of time, it gives us definite information regarding the *average* quality of the standard cottons and the maximum variation we may expect in any one season. In the second place, since the standard cottons have *not* been selected at random but with an eye to the geographical distribution of the commercial crop, their quality and its seasonal variation reflect, to some extent, at least the variation in the quality of the commercial crop.

The third purpose served by these tests is to furnish the necessary data for the correlation of fibre-properties of Indian cottons with their spinning performance. The importance of establishing a satisfactory relationship of this kind lies in the fact that the cotton breeder is anxious to know, at the earliest possible stage, which of his new strains are likely to prove acceptable to the spinner. The spinning test, which at present is the only satisfactory means of furnishing an answer to this question, suffers from two serious drawbacks. In the first place, it needs considerable capital expenditure on machinery and apparatus and the services of a trained staff, which render it outside the financial scope of most cotton breeders. Secondly, it imposes upon him severe restrictions as regards the minimum weight of lint required for a satisfactory test. These two factors effectively cut down the number of new strains which may be examined in any one season. It follows, therefore, that if it were possible to establish a satisfactory relationship between the fibre-properties and spinning performance of a cotton, it would enable the breeder to predict the latter from the former, effecting a considerable saving both in time and labour. It would make it possible for him to decide, after making tests on little more than a handful of lint, which of his selections are likely to appeal to the spinner. The problem is greatly complicated by the well-known susceptibility of cotton to climatic and soil conditions, and can only be tackled satisfactorily by the statistical method. For this purpose a few observations here and there are not enough; it is necessary to have the results of a systematic investigation extending over several seasons. As has already been mentioned, besides the spinning test, half a dozen fibre-properties were determined accurately for each standard cotton in each season. The accumulated results for several seasons provided just the kind of data required for solving the above-mentioned problem, and the measure of success achieved, together with the limitations of this method are discussed in another bulletin.†

\* Technological Bulletin Series A, No. 25: "Testing of Indian Cottons for Quality."

† Technological Bulletin Series B, No. 17: The Prediction of the Spinning Value of a cotton from its fibre-properties.



rigidity, etc., are highly susceptible to fluctuations in humidity. In order to have a uniform basis of comparison, it is, therefore, necessary to reduce the observed values to a standard humidity. The standard humidity adopted at the Technological Laboratory is 70% R.H.; and the corrections applied to each of the fibre-properties mentioned above for actual higher or lower humidities are given in tabular form in Technological Bulletin Series A, No. 25. Since all values of fibre-properties given in this Bulletin have already been corrected for humidity, wherever necessary, it is unnecessary to give the humidity data for the fibre-testing section in the tables of fibre-test results. During the dry weather the relative humidity in the spinning room and the yarn-testing room is maintained as near 70% as possible by means of a humidifying plant. The relative humidities given in column 31 of the tables of spinning test results are the average values for the time during which a cotton remains on the ring frame. In the yarn-testing room the procedure adopted is as follows: For the lea test and the ballistic test the relative humidity is read just before and just after the test. If from the thermo-hygrograph record, the humidity is found to be fluctuating rapidly, which is rarely the case, a third reading is taken during the test. For the single thread test, the humidity is noted at the beginning and at the end of the tests on each bobbin, and the mean of these two values is taken as the humidity for that bobbin, giving in all 10 values for each count. The average value prevailing during the lea test, the ballistic test and the single thread test is shown against each count in column 32 of the tables of spinning test results. As the various yarn tests on any one count are performed either simultaneously or within a short interval of time, during which fluctuations in humidity are small, the above procedure does not seem open to any serious objection. If all the humidity data relating to the processing and testing of each cotton were included in these reports, it would make them unwieldy and tiresome.

#### IV. PRESENTATION OF RESULTS.

The general plan of the Technological reports on standard Indian cottons has already been described on page 4. It only remains to be stated that in the Tables of spinning test results, 1-20, the average for each count of all the results obtained for a cotton upto the 1927-28 season is given instead of the individual values for each season. After 1927-28 the mean for both lots is given for each season, while for the latest season, 1937-38, the results for each lot are shown separately. The waste percentages are shown against 20's or 10's counts, but, as the same rovings are used in the preparation of the other counts into which a cotton is spun, it follows that the blow-room loss and the card-room loss would be the same for any one of the other counts. The figures for "spinning loss," however, are for the total loss sustained in the spinning of all the counts and refer to small samples weighing 10 lbs. each. In the case of a bulk sample spun under mill conditions, the card-loss would be somewhat less, while the spinning loss would be appreciably higher than that shown in the tables. It is important to bear these points in mind, as otherwise erroneous ideas may be formed as regards the waste losses to be expected from these cottons. The Spinning Master's Reports on these cottons are now presented in tabular form so that any variation in the appearance, feel, etc., of a cotton, as revealed by the hand-and-eye examination, may readily be followed from season to season.

The Bulletin is brought to a close by two tables which give, in a summary form, the results for all the standard cottons tested in the different seasons. Table 21 contains the results of fibre tests on standard cottons from 1926-27 onwards, while table 22 contains the results of spinning tests for the last 10 seasons for a standard count (20's wherever possible) spun with moderate twist.

#### V. SEASONAL VARIATION OF STANDARD COTTONS.

The seasonal variation in the fibre-properties and the spinning quality of a cotton is discussed in the "Remarks" section in each report. The following three tables have been constructed with the object of

bringing out the degree of variability of the different cottons. They contain a summary of the results for (1) mean fibre-length, (2) mean fibre-weight per inch, and (3) the highest standard warp counts for which these cottons have been adjudged suitable in the different seasons. In each table the cottons have been divided into three classes according as they are slightly variable, variable, or very variable with respect to any one of the three properties mentioned above. The criteria of variability adopted for this purpose are as follows :—

|                           |                                                                                                          |
|---------------------------|----------------------------------------------------------------------------------------------------------|
| Fibre-length :            | Slightly variable : below 2 per cent.<br>Variable : 2-3 per cent.<br>Very variable : above 3 per cent.   |
| Fibre-weight per inch :   | Slightly variable : below 6 per cent.<br>Variable : 6-10 per cent.<br>Very variable : above 10 per cent. |
| Highest standard counts : | Slightly variable : below 6 per cent.<br>Variable : 6-10 per cent.<br>Very variable : above 10 per cent. |

*Seasonal Variation in Fibre-Length.*

| Cotton.      | Province or State.        | Mean Fibre-Length (inch.) |          |          |          |          |          |          |          |          |          |          |          |          |          | Grand Mean (inch.) | Co-efficient of Seasonal Variation (%). |
|--------------|---------------------------|---------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--------------------|-----------------------------------------|
|              |                           | 1924-25.                  | 1925-26. | 1926-27. | 1927-28. | 1928-29. | 1929-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |                    |                                         |
| Variable.    |                           |                           |          |          |          |          |          |          |          |          |          |          |          |          |          |                    |                                         |
| .. (Nagpur). | C.P. .. ..                | ..                        | ..       | ..       | ..       | ..       | ..       | 0.80     | 0.88     | 0.80     | 0.87     | 0.80     | 0.86     | 0.87     | 0.86     | 0.860              | 1.30                                    |
| .. 07        | .. Madras .. ..           | 0.84                      | 0.83     | 0.85     | 0.85     | 0.82     | 0.84     | 0.82     | 0.82     | 0.80     | 0.82     | 0.83     | 0.83     | 0.84     | 0.84     | 0.835              | 1.54                                    |
| .. a)        | .. C.P. .. ..             | ..                        | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       | 0.88     | 0.84     | 0.87     | 0.80     | 0.80     | 0.802              | 1.72                                    |
| ..           | .. Hyderabad .. ..        | 0.80                      | 0.83     | 0.82     | 0.82     | 0.84     | 0.81     | 0.80     | 0.70     | 0.81     | 0.83     | 0.82     | 0.82     | 0.82     | 0.84     | 0.822              | 2.14                                    |
| Co. 2        | .. Madras .. ..           | 0.02                      | 0.02     | 0.04     | 0.88     | 0.02     | 0.00     | 0.02     | 0.90     | 0.02     | 0.88     | 0.02     | 0.88     | 0.02     | 0.04     | 0.011              | 2.23                                    |
| ..           | .. United Provinces .. .. | ..                        | ..       | ..       | ..       | ..       | ..       | ..       | 0.80     | 0.79     | 0.70     | 0.81     | 0.81     | 0.82     | 0.80     | 0.799              | 2.41                                    |
| .. m         | .. C.P. .. ..             | ..                        | ..       | ..       | 0.83     | 0.84     | 0.84     | 0.80     | 0.78     | 0.82     | 0.80     | 0.80     | 0.80     | 0.70     | 0.82     | 0.811              | 2.49                                    |
| ..           | .. Bombay .. ..           | ..                        | 0.79     | 0.80     | 0.77     | 0.80     | 0.70     | 0.78     | 0.80     | 0.84     | 0.80     | 0.78     | 0.78     | 0.81     | 0.82     | 0.703              | 2.70                                    |
| ..           | .. Bombay .. ..           | ..                        | ..       | 0.88     | 0.88     | 0.90     | 0.92     | 0.90     | 0.93     | 0.92     | 0.90     | 0.91     | 0.94     | 0.92     | 0.95     | 0.925              | 2.07                                    |
| Variable—    |                           |                           |          |          |          |          |          |          |          |          |          |          |          |          |          |                    |                                         |
| ..           | .. Bombay .. ..           | 0.81                      | 0.82     | 0.81     | 0.86     | 0.82     | 0.84     | 0.88     | 0.80     | 0.81     | 0.81     | 0.70     | 0.84     | 0.80     | 0.83     | 0.823              | 3.03                                    |
| ..           | .. Bombay .. ..           | 0.05                      | 0.02     | 0.03     | 0.04     | 0.00     | 0.07     | 0.04     | 0.00     | 0.01     | 0.00     | 0.00     | 1.01     | 0.92     | 0.08     | 0.054              | 3.18                                    |
| ..           | .. Punjab .. ..           | 1.02                      | 1.00     | 0.07     | 0.04     | 0.06     | 1.00     | 0.06     | 0.00     | 0.95     | 0.94     | 0.94     | 0.97     | 0.90     | 0.90     | 0.061              | 3.22                                    |
| ..           | .. Madras .. ..           | 0.80                      | 0.88     | 0.94     | 0.88     | 0.92     | 0.92     | 0.90     | 0.85     | 0.91     | 0.80     | 0.94     | 0.92     | 0.80     | 0.90     | 0.807              | 3.20                                    |
| .. rum.      | .. C.P. .. ..             | ..                        | ..       | 0.84     | 0.83     | 0.80     | 0.81     | 0.82     | 0.83     | 0.82     | 0.77     | 0.83     | 0.82     | 0.80     | 0.82     | 0.823              | 3.37                                    |
| ..           | .. Punjab .. ..           | ..                        | 0.72     | 0.03     | 0.73     | 0.00     | 0.00     | 0.00     | 0.70     | 0.74     | 0.68     | 0.72     | 0.76     | 0.72     | 0.76     | 0.718              | 8.77                                    |
| .. ur ..     | .. Sind .. ..             | ..                        | ..       | ..       | ..       | ..       | ..       | 0.03     | 0.02     | 0.00     | 1.02     | 0.07     | 0.04     | 0.05     | 0.05     | 0.054              | 3.88                                    |
| ..           | .. Madras .. ..           | 0.80                      | 0.82     | 0.82     | ..       | 0.84     | 0.84     | 0.91     | 0.80     | 0.82     | 0.80     | 0.83     | 0.90     | 0.86     | 0.88     | 0.849              | 3.89                                    |
| ..           | .. Punjab .. ..           | 0.80                      | 0.82     | 0.78     | 0.70     | 0.70     | 0.82     | 0.77     | 0.72     | 0.78     | 0.73     | 0.82     | 0.80     | 0.70     | 0.70     | 0.781              | 4.01                                    |
| ..           | .. United Provinces .. .. | 0.72                      | 0.72     | 0.06     | 0.70     | 0.72     | 0.08     | 0.00     | 0.00     | 0.07     | 0.04     | 0.06     | 0.00     | 0.05     | 0.07     | 0.076              | 4.05                                    |
| ..           | .. Sind .. ..             | ..                        | ..       | ..       | ..       | ..       | 0.60     | 0.02     | 0.08     | 0.02     | 0.70     | 0.70     | 0.60     | 0.08     | 0.71     | 0.077              | 4.05                                    |



## Seasonal Variation in Fibre-Weight per inch.

| Station.  | Province or State. | Mean Fibre-Weight per inch (10.5 oz.) |          |          |          |          |          |         |          |          |       | Grand Mean (10.5 oz.) | Co-efficient of Seasonal Variation (%). |       |       |      |
|-----------|--------------------|---------------------------------------|----------|----------|----------|----------|----------|---------|----------|----------|-------|-----------------------|-----------------------------------------|-------|-------|------|
|           |                    | 1929-30                               | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36 | 1936-37. | 1937-38. |       |                       |                                         |       |       |      |
| Variable. |                    |                                       |          |          |          |          |          |         |          |          |       |                       |                                         |       |       |      |
| ..        | C.P.               | ..                                    | ..       | ..       | ..       | 0.172    | 0.167    | 0.170   | 0.170    | 0.169    | 0.171 | 2.7                   |                                         |       |       |      |
| ..        | Madras             | ..                                    | ..       | ..       | ..       | 0.175    | 0.166    | 0.172   | 0.175    | 0.171    | 0.167 | 0.170                 | 0.180                                   | 0.181 | 0.173 | 3.0  |
| (Nagpur)  | C. P.              | ..                                    | ..       | ..       | ..       | ..       | 0.181    | 0.181   | 0.184    | 0.175    | 0.180 | 0.186                 | 0.176                                   | 0.173 | 0.181 | 3.2  |
| ..        | C.P.               | ..                                    | ..       | ..       | ..       | 0.180    | 0.186    | 0.176   | 0.180    | 0.188    | 0.184 | 0.193                 | 0.182                                   | 0.170 | 0.181 | 4.3  |
| ..        | Madras             | ..                                    | ..       | ..       | ..       | 0.181    | 0.161    | 0.181   | 0.167    | 0.161    | 0.167 | 0.157                 | 0.170                                   | 0.180 | 0.170 | 5.3  |
| ..        | Madras             | ..                                    | ..       | ..       | ..       | 0.169    | 0.167    | 0.187   | 0.156    | 0.163    | 0.171 | 0.153                 | 0.163                                   | 0.171 | 0.167 | 5.9  |
| ..        | Hyderabad          | ..                                    | ..       | ..       | ..       | 0.152    | 0.175    | 0.172   | 0.175    | 0.166    | 0.169 | 0.160                 | 0.188                                   | 0.174 | 0.170 | 6.0  |
| ..        | U.P.               | ..                                    | ..       | ..       | ..       | 0.277    | 0.301    | 0.311   | 0.290    | 0.262    | 0.271 | 0.261                 | 0.275                                   | 0.282 | 0.282 | 6.1  |
| ..        | Sind               | ..                                    | ..       | ..       | ..       | ..       | 0.146    | 0.120   | 0.120    | 0.131    | 0.127 | 0.117                 | 0.138                                   | 0.120 | 0.134 | 6.3  |
| ..        | Bombay             | ..                                    | ..       | ..       | ..       | 0.148    | 0.153    | 0.154   | 0.134    | 0.153    | 0.147 | 0.162                 | 0.166                                   | 0.142 | 0.151 | 6.4  |
| ..        | Madras             | ..                                    | ..       | ..       | ..       | 0.136    | 0.133    | 0.145   | 0.123    | 0.122    | 0.132 | 0.162                 | 0.136                                   | 0.160 | 0.137 | 7.8  |
| ..        | Bombay             | ..                                    | ..       | ..       | ..       | 0.180    | 0.201    | 0.176   | 0.160    | 0.160    | 0.163 | 0.163                 | 0.193                                   | 0.155 | 0.170 | 8.0  |
| ..        | C.P.               | ..                                    | ..       | ..       | ..       | 0.176    | 0.170    | 0.174   | 0.163    | 0.184    | 0.165 | 0.195                 | 0.195                                   | 0.152 | 0.175 | 8.3  |
| ..        | U.P.               | ..                                    | ..       | ..       | ..       | ..       | ..       | 0.204   | 0.195    | 0.181    | 0.161 | 0.184                 | 0.168                                   | 0.169 | 0.185 | 8.3  |
| ..        | Punjab             | ..                                    | ..       | ..       | ..       | 0.272    | 0.287    | 0.242   | 0.274    | 0.282    | 0.263 | 0.261                 | 0.300                                   | 0.230 | 0.270 | 8.7  |
| ..        | Bombay             | ..                                    | ..       | ..       | ..       | 0.195    | 0.237    | 0.225   | 0.240    | 0.190    | 0.232 | 0.216                 | 0.221                                   | 0.211 | 0.222 | 8.8  |
| Variable— |                    |                                       |          |          |          |          |          |         |          |          |       |                       |                                         |       |       |      |
| ..        | Punjab             | ..                                    | ..       | ..       | ..       | 0.142    | 0.142    | 0.122   | 0.114    | 0.110    | 0.120 | 0.152                 | 0.124                                   | 0.115 | 0.128 | 10.8 |
| ..        | Sind               | ..                                    | ..       | ..       | ..       | 0.340    | 0.333    | 0.307   | 0.290    | 0.293    | 0.293 | 0.237                 | 0.272                                   | 0.273 | 0.294 | 10.8 |
| ..        | Punjab             | ..                                    | ..       | ..       | ..       | 0.155    | 0.108    | 0.161   | 0.143    | 0.140    | 0.142 | 0.175                 | 0.157                                   | 0.148 | 0.158 | 11.9 |
| ..        | Bombay             | ..                                    | ..       | ..       | ..       | 0.181    | 0.175    | 0.183   | 0.194    | 0.147    | 0.140 | 0.150                 | 0.180                                   | 0.195 | 0.173 | 12.3 |

## Seasonal Variation in Highest Standard Warp Counts.

| n.        | Province or State.  | Highest Standard Warp Counts. |          |          |          |          |          |          |          |          |          |          |          |          |          | Grand Mean | Co-efficient of Seasonal Variation (%). |
|-----------|---------------------|-------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------------|-----------------------------------------|
|           |                     | 1924-25.                      | 1925-26. | 1926-27. | 1927-28. | 1928-29. | 1929-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |            |                                         |
| Variable. |                     |                               |          |          |          |          |          |          |          |          |          |          |          |          |          |            |                                         |
| ..        | Bombay .. ..        | ..                            | ..       | 38       | 38       | 39       | 40       | 37       | 40       | 36       | 38       | 42       | 42       | 41       | 39       | 39.1       | 4.0                                     |
| (Nagpur)  | C.P. .. ..          | ..                            | ..       | ..       | ..       | ..       | ..       | 30       | 29       | 31       | 34       | 30       | 33       | 31       | 33       | 32.1       | 7.2                                     |
| ..        | C.P. .. ..          | ..                            | ..       | 24       | 26       | 26       | 21       | 26       | 25       | 23       | 24       | 28       | 23       | 25       | 24       | 24.0       | 7.4                                     |
| ..        | Sind .. ..          | ..                            | ..       | ..       | ..       | ..       | ..       | 42       | 42       | 50       | 50       | 43       | 45       | 42       | 50       | 45.6       | 8.5                                     |
| ..        | C.P. .. ..          | ..                            | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       | 25       | 30       | 31       | 27       | 30       | 28.6       | 8.8                                     |
| ..        | C.P. .. ..          | ..                            | ..       | ..       | 19       | 23       | 21       | 18       | 21       | 25       | 21       | 22       | 20       | 23       | 24       | 21.5       | 9.8                                     |
| ..        | United Provinces .. | 7                             | 8        | 7        | 7        | 7        | 7        | 7        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6.6        | 9.8                                     |
| ..        | Punjab .. ..        | 34                            | 32       | 40       | 42       | 39       | 42       | 44       | 39       | 44       | 45       | 44       | 45       | 41       | 45       | 41.4       | 10.0                                    |
| Variable— |                     |                               |          |          |          |          |          |          |          |          |          |          |          |          |          |            |                                         |
| ..        | Madras .. ..        | 30                            | 30       | 27       | ..       | 24       | 27       | 36       | 30       | 25       | 23       | 29       | 30       | 30       | 29       | 28.8       | 10.2                                    |
| ..        | Madras .. ..        | 32                            | 32       | 34       | 31       | 31       | 35       | 35       | 30       | 37       | 37       | 40       | 40       | 42       | 35       | 35.1       | 10.7                                    |
| ..        | Bombay .. ..        | ..                            | 12       | 14       | 15       | 16       | 12       | 12       | 10       | 13       | 16       | 14       | 12       | 13       | 13       | 13.0       | 11.0                                    |
| ..        | Bombay .. ..        | 31                            | 26       | 32       | 30       | 32       | 34       | 29       | 30       | 31       | 37       | 34       | 34       | 26       | 33       | 31.8       | 11.1                                    |
| Co.2      | Madras .. ..        | 29                            | 25       | 37       | 33       | 26       | 28       | 29       | 27       | 24       | 26       | 30       | 30       | 33       | 33       | 29.3       | 12.0                                    |
| ..        | Punjab .. ..        | ..                            | 6        | 8        | 8        | 7        | 8        | 8        | 8        | 10       | 8        | 9        | 8        | 7        | 9½       | 8.0        | 13.1                                    |
| ..        | Punjab .. ..        | 22                            | 22       | 24       | 22       | 16       | 20       | 22       | 20       | 25       | 24       | 27       | 26       | 27       | 24       | 22.9       | 13.2                                    |
| ..        | Hyderabad .. ..     | 22                            | 24       | 24       | 24       | 22       | 27       | 28       | 27       | 28       | 29       | 30       | 34       | 30       | 33       | 27.3       | 13.8                                    |
| ..        | Madras .. ..        | 26                            | 26       | 21       | 24       | 20       | 23       | 28       | 21       | 23       | 25       | 23       | 23       | 34       | 30       | 25.2       | 14.4                                    |
| ..        | Sind .....          | ..                            | ..       | ..       | ..       | ..       | 6        | 6        | 6        | 6        | 8        | 9        | 7        | 7        | 7        | 6.9        | 15.3                                    |
| ..        | Bombay .. ..        | 20                            | 30       | 38       | 38       | 26       | 32       | 35       | 20       | 30       | 30       | 33       | 30       | 30       | 33       | 31.4       | 15.8                                    |
| ..        | United Provinces .. | ..                            | ..       | ..       | ..       | ..       | ..       | ..       | 15       | 14       | 18       | 22       | 16       | 23       | 19       | 18.1       | 19.0                                    |

In the table showing the seasonal variation in fibre-weight per inch the grand mean and the co-efficient of seasonal variation are calculated for samples received after 1928-29. Owing to a change in the method of the determination of the mean fibre-weight per inch introduced in 1929-30 to which a reference has been made above, the values for the subsequent seasons are not strictly comparable with those for the earlier seasons.

It will be seen that there is very little correspondence between the degree of variability of the standard Indian cottons with respect to all the three above-mentioned properties. Cottons which are "slightly variable" in regard to one property are "variable" or even "very variable" with respect to the other two, the only exceptions being P.A. 4F and Sind N.R, which are "very variable" with respect to all the three properties. However, if we consider only two fibre-properties at a time, we can pick out many cottons which fall in the same class as regards variability. Among such pairs it is interesting to note that correspondence between variation in mean fibre-length and the highest standard warp count is more frequent than that between the other two pairs. This brings out indirectly the closer association of spinning performance and mean length in the case of the Indian cottons. It will also be seen that although occasionally there may be large fluctuations in the highest standard warp counts for which these cottons are adjudged suitable, there is no evidence of a steady deterioration of quality in any of them during the last ten seasons. It is necessary to emphasise this point as misleading statements based upon insufficient and unreliable data are sometimes made by ill-informed people to the effect that the Indian cotton crop is deteriorating in quality from year to year.

#### VI. STANDARD COTTONS OF 1937-38.

The results of the various fibre and yarn tests made on these cottons together with details of machinery and treatment, etc., will be found in the Technological reports in the following pages. A few general remarks may be made here on the performance of the 1937-38 cottons as compared with those of the last few seasons. It was stated in a former issue of this Bulletin that the standard cottons of 1930-31 gave, on the whole, much better performance than those of 1929-30, but that this improvement was not maintained in the following season. The set-back, however, proved temporary and the 1932-33 cottons registered, on the whole, better performance than those of 1931-32. This improvement was maintained in the following two seasons, and in 1934-35 the cottons yielded, on the whole, even better results than in the previous season. Thus, in a majority of cases, these cottons registered a steady improvement from 1930-31 to 1934-35. This improvement, however, suffered a set-back in the 1935-36 season, from which there was a welcome change for the better in the last season. In order to concentrate our attention on the current and the last season, the following table has been constructed in which these cottons have been entered into three columns, viz., those which gave better performance (column 1), those which gave the same performance (column 2) and those which gave a poorer performance (column 3) as compared with the last year's samples. The highest standard warp counts, for which each cotton is adjudged suitable has been adopted as an index of its spinning performance :—

| Better.                                                                                                                                               | Same.                                                 | Poorer.                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Gadag I.<br>Surat 1027 A.L.F.<br>Sind Sudhar<br>P.A. 289 F.<br>Mollisoni<br>Verum 262 (Akola)<br>V 434 (Akola).<br>Late Verum (Nagpur).<br>Umri Bani. | Wagad S.<br>Sind N.R.<br>A 10.<br>Cambodia Co.2.<br>. | Jayawant.<br>P.A. 4F.<br>C 402.<br>Verum 262 (Nagpur)<br>Nandyal 14.<br>Hagari 1.<br>Karunganni C7.<br>Koilpatti 1. |

It will be seen that 9 cottons show an improvement over last year, 4 gave practically the same test, while 8 cottons registered poorer results. The improvement is most pronounced in the case of Surat 1027 A.L.F. and Mollisoni, less so for Gadag 1 and Sind Sudhar, still less for V434 and Umri Bani and quite small in the case of the other cottons. The decline is most marked in the case of Koilpatti 1, less so for C402 and Nandyal 14, still less for C7 and P.A. 4F and quite small for the other cottons. Among the Madras cottons all except Cambodia Co.2 registered a falling off as compared with last year, Cambodia Co.2 giving practically the same result. Among the Bombay Cottons only Gadag 1 and Surat 1027A .L.F. showed improvement, Wagad 8 remained unchanged, while Jayawant suffered yet another set-back. Thus, while Madras cottons gave poorer results than last year, Bombay cottons gave, on the whole, better results. All the C.P. cottons, except Verum 262 (Nagpur), show an improvement over last year, which is more pronounced for V434 than for the remaining two cottons. The Hyderabad cotton, Umri Bani also gave better results as compared with last year. Among the Sind cottons, Sind N.R. remained unchanged, but Sind Sudhar registered a considerable improvement which raised this cotton to the first place among the standard Indian cottons. Among the Punjab cottons P.A. 4F showed a falling off, but the other two cottons, P.A. 289F and Mollisoni, registered an improvement which is quite considerable in the case of the latter cotton. The U.P. cottons have not done so well this year, C402 shows an appreciable decline, while A.19 registered practically the same performance.

## I.—JAYAWANT (Kumpta).

## Seasons.

|                            |                            |
|----------------------------|----------------------------|
| 1926-27 (Sample No. 240).  | 1932-33 (Sample No. 2015). |
| 1927-28 (Sample No. 394).  | 1933-34 (Sample No. 2416). |
| 1928-29 (Sample No. 593).  | 1934-35 (Sample No. 2762). |
| 1929-30 (Sample No. 840).  | 1935-36 (Sample No. 3170). |
| 1930-31 (Sample No. 1083). | 1936-37 (Sample No. 3678). |
| 1931-32 (Sample No. 1377). | 1937-38 (Sample No. 4056). |

## I.—AGRICULTURAL DETAILS.

- (i) *Botanical Species* :—*Gossypium herbaceum*.
- (ii) *History* :—A pure strain obtained from a cross between two pure line selections of Kumpta, viz., Dharwar 1 and Dharwar 2. It possesses the good characters of both parents, namely, staple and resistance to wilt.
- (iii) *District of Growth* :—The districts of Dharwar, Belgaum, Bijapur, and the several Indian States. The particular samples used in these tests were grown at the Government Agricultural Station, Dharwar.
- (iv) *Growing Period* :—Sown from the first week of August to the end of September, and usually picked from the 2nd week of February upto the middle of April. The 1937-38 sample was dibbled on 2nd August 1937 and picked on 21st February 1938. Picking lasted till the end of March 1938.
- (v) *Soil* :—Deep and medium black soil.
- (vi) *Rainfall* :—From 20 to 30 inches annually; in 1932-33 about 40 inches; in 1933-34, the rainfall of the dry tract was upto 28" and that of the transition tract was 40"; 28" in 1934-35; 30.94" in 1935-36; 24" in 1936-37; 33" in 1937-38.
- (vii) *Temperature* :—Average minimum about 60° F.
- (viii) *Plant Particulars* :—(Average Values) :—
- Bolls per plant : 12 (spacing : 24" × 12").
  - Seeds for boll : 18.
  - Weight of seed : 57 milligrammes.
  - Weight of lint per seed : 23 milligrammes.
  - Ginning Percentage : Normally 28-29 (transition tract), 26-27 (dry tract); in 1933-34, 1 per cent. more than the normal in both tracts. 28.2 in 1934-35; 28.30 in 1935-36; 28 in 1936-37; 28.4 in 1937-38.
- (ix) *Yield of seed-cotton* :—Normally about 300 lbs. per acre. In 1932-33 the season was unfavourable owing to heavy rains in the early stage and anti-monsoon rains in the picking season which resulted in a yield of about 175 lbs. per acre; in 1933-34 due to abnormal monsoon conditions in the growing period and anti-monsoon showers in the picking time, the yield was only 100 lbs. per acre. 500-700 lbs. in the Government Farm, Dharwar and 300 lbs. on an average in the district in 1934-35; 744 lbs. per acre in 1935-36; 653 lbs. in 1936-37; 664 lbs. per acre in 1937-38 in the Government Farm.
- (x) *Area under cultivations* :—

|         |    |              |         |    |                 |
|---------|----|--------------|---------|----|-----------------|
| 1929-30 | .. | 1,000 acres. | 1934-35 | .. | 1,86,350 acres. |
| 1930-31 | .. | 18,000 "     | 1935-36 | .. | 1,65,200 "      |
| 1931-32 | .. | 1,16,500 "   | 1936-37 | .. | 1,72,300 "      |
| 1932-33 | .. | 61,020 "     | 1937-38 | .. | 2,45,320 "      |
| 1933-34 | .. | 1,38,140 "   |         |    |                 |

The above figures relate only to the area under seed of known origin.

## II.—GRADER'S REPORT.

|                                    | 1928-29.              | 1929-30.            | 1930-31.               | 1931-32.              | 1932-33.              | 1933-34.          | 1934-35.          | 1935-36.              | 1936-37.              | 1937-38.               |
|------------------------------------|-----------------------|---------------------|------------------------|-----------------------|-----------------------|-------------------|-------------------|-----------------------|-----------------------|------------------------|
| Contract valued under              | .. .. Kumpta.         | .. .. Branch.       | .. .. Branch.          | .. .. J/A Branch.     | .. .. Branch.         | .. .. Branch.     | .. .. Branch.     | .. .. Branch.         | .. .. Branch.         | .. .. Branch.          |
| Class                              | .. .. Superfine.      | .. .. Fine.         | .. .. Extra Superfine. | .. .. Superfine.      | .. .. Superfine.      | .. .. Fine.       | .. .. Superfine.  | .. .. Superfine.      | .. .. Superfine.      | .. .. Extra Superfine. |
| Colour                             | .. .. Slightly cream. | .. .. White.        | .. .. White.           | .. .. White to cream. | .. .. Slightly cream. | .. .. Cream.      | .. .. White.      | .. .. White.          | .. .. Brownish white. | .. .. White.           |
| Staple Length                      | .. .. 1½ inch.        | .. .. 1 inch.       | .. .. Full 1½.         | .. .. 1½ inch.        | .. .. 1 inch.         | .. .. 21/32 inch. | .. .. 15/16 inch. | .. .. 7/8 inch.       | .. .. 15/16 inch.     | .. .. 7/8 inch.        |
| Staple Strength                    | .. .. Good.           | .. .. Good.         | .. .. Good.            | .. .. Good.           | .. .. Fair.           | .. .. Fair.       | .. .. Good.       | .. .. Good.           | .. .. Very good.      | .. .. Good.            |
| Regularity                         | .. .. Fair.           | .. .. Good.         | .. .. Fair.            | .. .. Fair.           | .. .. Fair.           | .. .. Regular.    | .. .. Regular.    | .. .. Regular.        | .. .. Regular.        | .. .. Regular.         |
| Value above or below contract rate | .. .. Rs. 60 on.      | .. .. Rs. 35/40 on. | .. .. Rs. 75 on.       | .. .. Rs. 60 on.      | .. .. Rs. 55 on.      | .. .. Rs. 70 on.  | .. .. Rs. 80 on.  | .. .. Rs. 40 on.      | .. .. Rs. 50 on.      | .. .. Rs. 60 on.       |
| Basis                              | .. .. Rs. 340.        | .. .. Rs. 205.      | .. .. Rs. 200.         | .. .. Rs. 160-8-0.    | .. .. Rs. 177.        | .. .. Rs. 225.    | .. .. Rs. 232.    | .. .. Rs. 190.        | .. .. Rs. 215.        | .. .. Rs. 145.         |
| Date of Valuation                  | .. .. 20-9-20.        | .. .. 16-9-30.      | .. .. 1-7-31.          | .. .. 2-7-32.         | .. .. 6-12-33.        | .. .. 14-8-31.    | .. .. 8-7-35.     | .. .. 23-5-36.        | .. .. 8-7-37.         | .. .. 30-5-38.         |
| Remarks                            | .. .. Soft.           | .. ..               | .. ..                  | .. ..                 | .. ..                 | .. ..             | .. ..             | .. .. Somewhat wasty. | .. ..                 | .. ..                  |

III.—FIBRE PARTICULARS.

1. Fibre-Length Distribution (Balls Sorter) :—

| Mean group-length in eighths of an inch. | Percentage. |          |          |          |          |          |          |          |          |          |  |
|------------------------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|
|                                          | 1928-29.    | 1929-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |  |
| 2                                        | 0.1         | 1.2      | 1.4      | 1.3      | 1.0      | 0.5      | 0.3      | 0.4      | 0.1      | 0.2      |  |
| 3                                        | 0.5         | 1.3      | 2.8      | 1.5      | 2.0      | 1.1      | 1.0      | 1.0      | 1.4      | 1.1      |  |
| 4                                        | 1.5         | 6.8      | 0.0      | 5.0      | 7.3      | 2.1      | 2.0      | 2.0      | 2.1      | 2.4      |  |
| 5                                        | 3.8         | 14.8     | 0.0      | 11.0     | 16.3     | 6.6      | 6.5      | 5.4      | 5.4      | 4.0      |  |
| 6                                        | 14.9        | 11.1     | 11.1     | 11.1     | 16.3     | 14.1     | 11.0     | 10.8     | 12.0     | 10.1     |  |
| 7                                        | 28.1        | 30.6     | 22.4     | 23.6     | 20.0     | 22.3     | 22.1     | 21.0     | 20.0     | 22.8     |  |
| 8                                        | 28.2        | 29.4     | 30.2     | 26.0     | 24.8     | 27.7     | 30.9     | 29.0     | 29.7     | 30.1     |  |
| 9                                        | 11.3        | 13.0     | 10.6     | 10.0     | 14.8     | 12.5     | 18.1     | 19.1     | 17.4     | 19.0     |  |
| 10                                       | 3.5         | 3.3      | 4.6      | 6.0      | 3.8      | 4.5      | 1.1      | 0.0      | 0.0      | 1.7      |  |
| 11                                       | 0.4         | 1.0      | 1.0      | ..       | ..       | 0.9      | 1.1      | 0.0      | 0.0      | 1.7      |  |

2. Fibre-Length (inch) :—

|                                                  |    |    |    |    |    |    |    |    |    |    |    |
|--------------------------------------------------|----|----|----|----|----|----|----|----|----|----|----|
| (a) By Balls Sorter                              | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (b) By Ball Sorter                               | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 3. Fibre-Length Irregularity (%)                 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 4. Fibre-Weight per inch (millionth of an ounce) | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 5. Fibre-Strength (oz.) :—                       | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (a) By Balls Tester                              | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (b) By O'Neil Tester                             | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Fibre-Strength per unit fibre-weight per inch    | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 7. Maturity Test Results (%).                    | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (a) Mature                                       | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (b) Half-mature                                  | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (c) Immature                                     | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |

\* Mean of two seasons, 1927-29.

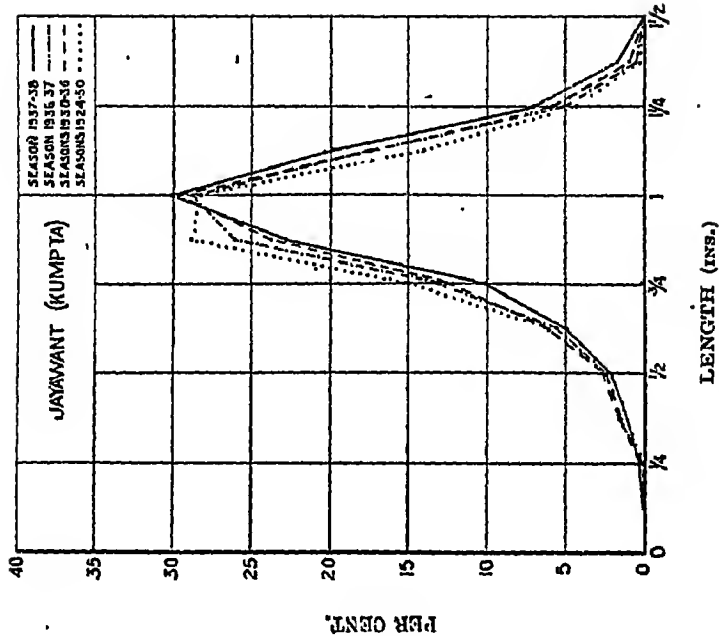


Fig. 1.—Sorter Diagrams for Jayawant (Kumpta).

## IV.—SPINNING TESTS.

*Treatment :—*

- (a) *Blow-room*—Upto 1930-31 (inclusive):—Lattice feeder, Crighton (once), Hopper, Scutcher (3 times).

Upto 1933-34 (inclusive):—As above but two passages in the Crighton. 1934-35 onwards:—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

- (b) *Card-room*—Upto 1934-35:—Card, Drawing (2 heads), Slubber, Inter, Rover spun from single hank roving on Ring Frame No.1. 1935-36 onwards:—As above but spun from single hank roving on Ring Frame No.3 which is fitted with tape drive arrangement for spindles, while Ring Frame No.1 possesses a band drive arrangement.

2. *Spinning Master's Report :—*

| Season.                    | 1928-29.                            | 1929-30.                                   | 1930-31.         | 1931-32.                            | 1932-33.                            | 1933-34.                       | 1934-35.                       | 1935-36.                       | 1936-37.                       | 1937-38.                    |
|----------------------------|-------------------------------------|--------------------------------------------|------------------|-------------------------------------|-------------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|-----------------------------|
| Colour ..                  | White to creamy-white; bright.      | Creamy-white; bright.                      | White; bright.   | White; very bright.                 | White to creamy-white; very bright. | White to creamy-white; bright. | White to creamy-white; bright. | White to creamy-white; bright. | Creamy white to white; bright. | White; Bright.              |
| Cleanliness ..             | Very clean ..                       | Perfectly clean.                           | Perfectly clean. | Clean ..                            | Clean ..                            | Very clean.                    | Clean ..                       | Clean ..                       | Very clean.                    | Clean.                      |
| Feel ..                    | Good soft ..                        | Good bodied.                               | Good soft ..     | Good ..                             | Good bodied.                        | Good ..                        | Smooth bodied.                 | Smooth and bodied.             | Good bodied.                   | Good.                       |
| Spinning and neppiness.    | Well ginned.                        | Well ginned.                               | Well ginned.     | Well ginned.                        | Well (saw) ginned.                  | Well ginned.                   | Well ginned.                   | Well ginned.                   | Well ginned.                   | Well ginned.                |
| Ends and neppiness.        | ..                                  | ..                                         | Clean ..         | Clean ..                            | Clean ..                            | Clean ..                       | Clean ..                       | Clean ..                       | Good & clean.                  | Clean ..                    |
| Ends and neppiness.        | ..                                  | ..                                         | Good ..          | Good ..                             | Even and nep-free.                  | Even and nep-free.             | Even and nep-free.             | Even and nep-free.             | Good & clean.                  | Absolutely free from nepps. |
| Weight of ten flat-strips. | ..                                  | 9.3 grams ..                               | 8.7 grams ..     | 12.4 grams ..                       | 10.0 grams ..                       | 15.6 grams.                    | 17.1 grams.                    | 9.8 grams.                     | 11.1 grams.                    | 8.5 grams.                  |
| Remarks ..                 | Staple is fine, regular and strong. | Staple is fine, fairly regular and strong. | ..               | Altogether a very desirable sample. | ..                                  | ..                             | A very desirable cotton.       | ..                             | ..                             | ..                          |

3. *Spinning Test Details and Results :—* See Table 1, page 4.

## V.—REMARKS.

(i) *Fibre*.—The mean fibre-length has not shown much seasonal variation since 1929-30, being rather low in 1933-34. The fibre-weight per inch shows more variation, being unusually low in the three seasons 1933-36. The fibre-length irregularity is high in 1930-31, and in the three seasons, 1933-36. The fibre-strength has remained fairly uniform except in 1936-37 when it shows an improvement but owing to the increase in fibre-weight per inch in this and the subsequent season the intrinsic strength is rather low in these two seasons. The 1937-38 sample is somewhat longer than its predecessor but it has a lower percentage of mature fibres, while it has practically the same mean fibre-weight and fibre-strength.

(ii) *Waste*.—The samples of this cotton have always been supplied in a very clean condition and have given a low blow-room loss. The card-room loss has also been generally low, though the 1934-35 sample gave a higher card loss than the others.

(iii) *Breakages*.—Yarn breakages in the ring frame are generally few in 20's and 30's counts, but fairly numerous in 40's counts. Since 1933-34 they have been few even in 40's counts.

(iv) *Yarns*.—This cotton usually gives even 20's and even to fairly even 30's, though the 30's yarns of 1934-35 are better than usual. Its yarns were only slightly neppy upto 1932-33, after that year they became rather neppy, but show a good improvement in this respect in the last two seasons. Its spinning performance has remained remarkably uniform, the best results being obtained in the two seasons, 1934-36.

(v) *Conclusion*.—The following are the highest standard warp counts for which this cotton is adjudged suitable in the different seasons :—

|               |       |               |       |
|---------------|-------|---------------|-------|
| 1926-27 .. .. | 38's. | 1932-33 .. .. | 30's. |
| 1927-28 .. .. | 38's. | 1933-34 .. .. | 38's. |
| 1928-29 .. .. | 38's. | 1934-35 .. .. | 42's. |
| 1929-30 .. .. | 40's. | 1935-36 .. .. | 42's. |
| 1930-31 .. .. | 37's. | 1936-37 .. .. | 41's. |
| 1931-32 .. .. | 40's. | 1937-38 .. .. | 39's. |

TABLE 1.—SPINNING TEST RESULTS FOR JAYAWANT (Kumta).

| HANK (1937-38). |  |  |  |  |  |  |  |  |  | TRAVELLER COUNTS. |  |  |  |  |  |  |  |  |  | SPINDLE SPEED (1937-38). |  |  |  |  |  |  |  |  |  |
|-----------------|--|--|--|--|--|--|--|--|--|-------------------|--|--|--|--|--|--|--|--|--|--------------------------|--|--|--|--|--|--|--|--|--|
| Card            |  |  |  |  |  |  |  |  |  | 20's              |  |  |  |  |  |  |  |  |  | 20A                      |  |  |  |  |  |  |  |  |  |
| Shubber         |  |  |  |  |  |  |  |  |  | 30's              |  |  |  |  |  |  |  |  |  | 20B                      |  |  |  |  |  |  |  |  |  |
| Inter           |  |  |  |  |  |  |  |  |  | 40's              |  |  |  |  |  |  |  |  |  | 30                       |  |  |  |  |  |  |  |  |  |
| Rover           |  |  |  |  |  |  |  |  |  |                   |  |  |  |  |  |  |  |  |  | 40                       |  |  |  |  |  |  |  |  |  |
| 0.16            |  |  |  |  |  |  |  |  |  |                   |  |  |  |  |  |  |  |  |  | 9,700 r.p.m.             |  |  |  |  |  |  |  |  |  |
| 0.80            |  |  |  |  |  |  |  |  |  |                   |  |  |  |  |  |  |  |  |  | 10,500 r.p.m.            |  |  |  |  |  |  |  |  |  |
| 1.84            |  |  |  |  |  |  |  |  |  |                   |  |  |  |  |  |  |  |  |  | 9,800 r.p.m.             |  |  |  |  |  |  |  |  |  |
| 4.86            |  |  |  |  |  |  |  |  |  |                   |  |  |  |  |  |  |  |  |  | 9,750 r.p.m.             |  |  |  |  |  |  |  |  |  |

| Sample No. | Season. | Date of Spinning. | Counts Nominal. | WASTE PERCENTAGES. |                 |                |             | RING FRONT PARTICULARS.*               |                           |        |                 |                |                 |                            |                       |                |                             | YARN TEST RESULTS.     |                     |         |                 |                            |                      |                |                             |                 |                | TEMPERATURE (%). | RELATIVE HUMIDITY (%). |                        |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |     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     |       |      |       |      |       |      |       |      |       |  |
|------------|---------|-------------------|-----------------|--------------------|-----------------|----------------|-------------|----------------------------------------|---------------------------|--------|-----------------|----------------|-----------------|----------------------------|-----------------------|----------------|-----------------------------|------------------------|---------------------|---------|-----------------|----------------------------|----------------------|----------------|-----------------------------|-----------------|----------------|------------------|------------------------|------------------------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|--|
|            |         |                   |                 | How Room Loss.     | Card Room Loss. | Spinning Loss. | Total Loss. | Yarn Breaks per 100 spindles per hour. | Front Roller Speed R.P.M. | Draft. | Turns per Inch. | I.E.A.         |                 |                            | BALZETTO.             |                |                             | SINGLE THREAD.         |                     |         |                 |                            |                      |                |                             |                 |                |                  |                        |                        |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |  |
|            |         |                   |                 |                    |                 |                |             |                                        |                           |        |                 | Counts Actual. | Strength (lbs.) | Strength Irregularity (%). | Count-Weight Product. | Counts Actual. | Work of Rupture (inch-lbs.) | Work Irregularity (%). | Count-Work Product. | Counts. | Strength (ozs.) | Strength Irregularity (%). | Weakness Percentage. | Extension (%). | Extension Irregularity (%). | Evenness Class. | Neps per yard. |                  |                        | Turns per Inch Actual. |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |      |       |  |
| 503        | 1934-35 | 23-5-35           | 20 A            | 5.2                | 7.0             | 0.0            | 12.2        | 0                                      | 183                       | 4.59   | 10.85           | 10.3           | 103.1           | 0.6                        | 2.988                 | 10.0           | 123.4                       | 12.6                   | 187.0               | 10.0    | 123.4           | 12.6                       | 187.0                | 10.0           | 123.4                       | 12.6            | 187.0          | 10.0             | 123.4                  | 12.6                   | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 | 10.0 | 123.4 | 12.6 | 187.0 |  |



**2. GADAG 1 (Dharwar-American).**

|          |   |                           |          |   |                            |          |   |                            |
|----------|---|---------------------------|----------|---|----------------------------|----------|---|----------------------------|
| Seasons. | { | 1923-24 (Sample No. 70).  | Seasons. | { | 1928-29 (Sample No. 513).  | Seasons. | { | 1933-34 (Sample No. 2264). |
|          |   | 1924-25 (Sample No. 71).  |          |   | 1929-30 (Sample No. 719).  |          |   | 1934-35 (Sample No. 2707). |
|          |   | 1925-26 (Sample No. 131). |          |   | 1930-31 (Sample No. 1015). |          |   | 1935-36 (Sample No. 3155). |
|          |   | 1926-27 (Sample No. 244). |          |   | 1931-32 (Sample No. 1305). |          |   | 1936-37 (Sample No. 3619). |
|          |   | 1927-28 (Sample No. 308). |          |   | 1932-33 (Sample No. 1746). |          |   | 1937-38 (Sample No. 4080). |

### I.—AGRICULTURAL DETAILS.

- (i) *Botanical species* :—*Gossypium hirsutum*.
- (ii) *History* :—A pure line selection from the hairy-leaved type of Dharwar-American (Dharwar-Upland). Upland Georgian and New Orleans types were originally introduced at the Dharwar Farm, but unsuccessfully, in 1830; fresh seed was imported at intervals; in 1912 the work on American cotton was transferred to Gadag, where Gadag 1 was eventually isolated from the Dharwar-American mixture.
- (iii) *District of growth* :—Dharwar district. The cotton used in these tests is from the fourth generation crop grown at Malasamudra near Gadag, from seed, which has been multiplied on the Gadag-Selfing Plot, Gadag for the first two generations and on the cultivators' fields at Kurtakoti in the third generation.
- (iv) *Growing period* :—Sown from the first week in September to the middle of October, and picked from the first week of March upto the middle of April. In 1932-33, the picking extended to the first week of May. In 1937-38, regular sowings commenced in the last week of September to the middle of October. The cotton crop was forced to mature early due to deficiency of moisture and unfavourable weather conditions in the second fortnight of January 1938. Hence, picking commenced from second week of February to the end of March 1938.
- (v) *Soil* :—Medium black and black cotton soils.
- (vi) *Rainfall* :—From 20 to 30 inches annually. In 1932-33 it was abnormal and was fairly continuous during the season and interfered with all operations from preparing the land to the end of picking. Much cotton was damaged on this account and many bolls remained unopened on the plants. In 1933-34, above normal. 13.5 inches in 1934-35; 21.79 inches in 1935-36; 27.63 inches in 1936-37; 16.82 inches in 1937-38. No rains after the cotton was sown. But due to favourable weather conditions till the middle of January 1938, the cotton crop put forth vigorous vegetative growth. Unfortunately, in the second half of January 1938, due to unfavourable weather conditions, the crop lost its moisture, shed its buds, flowers and bolls and matured early.
- (vii) *Temperature* :—Average minimum about 60° F.
- (viii) *Plant Particulars (Average values)* :—
  - (a) Bolls per plant: 5 (spacing: 20" × 12").
  - (b) Seeds per boll: 17.
  - (c) Weight of seed: 97 milligrammes.
  - (d) Weight of lint per seed: 44 milligrammes.
  - (e) Ginning percentage: 34.
- (ix) *Yield of seed-cotton* :—In 1932-33 the yield in this part is 140 lbs. per acre though the average for the whole tract is only 75 lbs. as the latter part of the season was very unfavourable. The rainfall interfered with opening of bolls and also spoiled the cotton which was opened. In 1933-34, 170 lbs. per acre; the yield was reduced to some extent owing to rains in April 1934, the quality of the crop in respect of class was also spoiled to a small extent. In 1934-35, only 65 lbs. per acre; the yield was reduced owing to lack of moisture in the soil. In 1935-36, 160 to 168 lbs. per acre; in 1936-37 the estimation is about 170 lbs. of seed cotton per acre; in 1937-38, estimated yield is 168 lbs. of seed-cotton per acre.
- (x) *Area under cultivation* :—

The above figures give the annual area under seed of known origin.

## II.—GRADER'S REPORT.

|                                    | 1928-29.   | 1929-30.               | 1930-31.                             | 1931-32.      | 1932-33.  | 1933-34.   | 1934-35.   | 1935-36.                  | 1936-37.                    | 1937-38.         |
|------------------------------------|------------|------------------------|--------------------------------------|---------------|-----------|------------|------------|---------------------------|-----------------------------|------------------|
| Contract valued under .. ..        | Breach.    | Kumta.                 | Kumta.                               | Breach Kumta. | Breach.   | Breach.    | Breach.    | Breach A/M.               | Breach A/M.                 | Breach July/Aug. |
| Class .. ..                        | Fine.      | Fine.                  | Fine.                                | Fine.         | Fine.     | Fine.      | Superfine. | Fine.                     | Superfine.                  | Fine.            |
| Colour .. ..                       | White.     | White.                 | White.                               | White.        | White.    | White.     | White.     | Dull white.               | White.                      | Dull white.      |
| Staple Length .. ..                | 7/8 inch.  | 1 inch.                | 3/1-15/16 inch.                      | 29/32 inch.   | 7/8 inch. | 13/16 in.  | 13/16 in.  | Barely 3/4 in.            | 3/4 inch.                   | 3/4 in.          |
| Staple Strength .. ..              | Good.      | Fair.                  | Poor.                                | Fair.         | Fair.     | Fair.      | Fair.      | Fair.                     | Moderate.                   | Good.            |
| Regularity .. ..                   | Good.      | Fair.                  | Poor.                                | Fair.         | Poor.     | Fair.      | Regular.   | Rather irregular & wasty. | Slightly irregular & wasty. | Regular.         |
| Value above or below contract rate | Rs. 50 on. | Par.                   | Rs. 10 off.                          | Rs. 40 on.    | Rs. 5 on. | Rs. 30 on. | Rs. 50 on. | Rs. 10 on.                | Rs. 5 on.                   | Rs. 25 on.       |
| Basic .. ..                        | Rs. 320.   | Rs. 300.               | Rs. 250.                             | Rs. 181.      | Rs. 190.  | Rs. 200.   | Breach.    | Rs. 203.                  | Rs. 232.                    | Rs. 151.         |
| Date of Valuation .. ..            | 14-5-29.   | 24-5-30.               | 15-4-31.                             | 23-4-32.      | 1-5-33.   | 23-5-34.   | ..         | 25-4-35.                  | 22-5-37.                    | ..               |
| Remarks .. ..                      | ..         | Mostly Up-land cotton. | Not typical. Soft. More like Up-land | ..            | ..        | ..         | ..         | ..                        | ..                          | ..               |





## IV.—SPINNING TESTS.

eatment :—

**Blow-room.**—Upto 1934-35 (inclusive) :—Lattice Feeder, Crighton (twice), Hopper, Scutcher (3 times). The 1926-27 cotton was passed direct through the Crighton (once only).

1935-36 onwards :—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

**Card-room.**—Upto 1934-35 (inclusive) :—Card, Drawing (2 heads), Slubber, Inter, Rover, and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards :—As above but spun from single hank roving on Ring Frame No. 3 which is fitted with tape drive arrangement from spindles, while Ring Frame No. 1 possesses a band drive arrangement.

**Spinning Master's Report :—**

|                   | 1928-29.                                | 1929-30.                                                   | 1930-31.        | 1931-32.                                     | 1932-33.      | 1933-34.                              | 1934-35.                                 | 1935-36.                                        | 1936-37.                               | 1937-38.                                 |
|-------------------|-----------------------------------------|------------------------------------------------------------|-----------------|----------------------------------------------|---------------|---------------------------------------|------------------------------------------|-------------------------------------------------|----------------------------------------|------------------------------------------|
| .. ..             | Creamy-white.                           | Creamy-white; bright.                                      | White; bright.  | Dull creamy-white.                           | Creamy-white. | White to creamy-white; bright. Clean. | White to creamy-white; brightish. Clean. | White to creamy-white; brightish. Fairly clean. | White to creamy-white. A little leafy. | White to creamy-white. A little leafy.   |
| .. ..             | Fairly clean.                           | Leafy.                                                     | A trifle leafy. | Clean; almost free of leaf and stains. Soft. | Fairly clean. | Good smooth.                          | Good smooth.                             | Good.                                           | Good.                                  | Good.                                    |
| .. ..             | Good.                                   | Good bodied.                                               | Good.           | Good soft.                                   | Good soft.    | Good smooth.                          | Good smooth.                             | Good.                                           | Good.                                  | Good.                                    |
| 1 neppi-<br>.. .. | Well-ginned.                            | Well-ginned.                                               | Well-ginned.    | Well-ginned.                                 | Well-ginned.  | Well-ginned.                          | Well-ginned.                             | Well-ginned.                                    | Well-ginned.                           | Well-ginned.                             |
| .. ..             | Fair number of small undeveloped seeds. | One per cent. ginned and unginned and occasional cut seed. | ..              | ..                                           | ..            | ..                                    | ..                                       | ..                                              | ..                                     | ..                                       |
| .. ..             | ..                                      | ..                                                         | Clean ..        | ..                                           | Clean.        | Clean.                                | Clean and soft. Good.                    | Clean.                                          | Clean and good. Good, nepp-free.       | Fairly clean. Good, fairly free of neps. |
| .. ..             | ..                                      | ..                                                         | First class.    | Very even and free of nep.                   | Good.         | Even.                                 | ..                                       | Even and nepp-free.                             | ..                                     | ..                                       |
| ten flat<br>.. .. | ..                                      | ..                                                         | 12.6 grams.     | 15.2 grams.                                  | 17.1 grams.   | 14.0 grams.                           | 16.4 grams.                              | 12.2 grams.                                     | 11.8 grams.                            | 14.2 grams.                              |
| .. ..             | ..                                      | ..                                                         | ..              | ..                                           | ..            | ..                                    | ..                                       | ..                                              | ..                                     | ..                                       |

**Spinning Test Details and Results :—**See Table 2, page 20.

Card Production for Sample 70 :—11.4 lbs. per hour.

Ring Frame Production for 40's, Sample 70 :—2.43 oz. per spindle per 10 hours.

## V.—REMARKS.

**Fibre :—**The fibre-properties of this cotton show large seasonal variations. The fibre-length is some 9 per cent. higher in 1930-31 than in the following three

The staple length irregularity increased steadily upto 1933-34, declined in the two seasons and rose again in 1936-37. The fibre-weight per inch was unusually low in 1932-33 and again in 1937-38. With few exceptions the fibre-strength, however, remained fairly constant, but the fibre-strength per unit fibre-weight per inch is low, the high value recorded in 1932-33 being 40 per cent. higher than that in the average season. The 1937-38 cotton is longer, more regular in length and finer than the average, but it possesses a lower percentage of mature fibres.

**Waste :—**The samples of this cotton usually give about 7 per cent. blow-room and card-room loss, but the former loss was rather high in 1929-30 and the latter in 1933.

**Breakages :—**Yarn breakages in the ring frame are generally few in 20's but numerous in 30's and 34's, the exceptions being 20's of 1928-29 and 1931-32; all of 1932-33 and 34's of 1933-34. The 1937-38 sample gave fairly numerous breakages in the two higher counts into which it was spun.

**Yarns :—**Yarns spun from this cotton have given variable results in the different seasons as regards evenness, neppiness and strength. Thus, the 20's B yarns which are generally even, are very even to even in 1930-31 and only even to fairly even in the following seasons. They are generally somewhat neppy, but since 1936-37 they have shown improvement in this respect. As will be seen from the following table, this cotton gave poor yarn strength results in 1926-27, 1927-28 and 1937-38, not so good in 1923-24 and 1924-25 or indeed in 1924-25.

|         |    |       |         |    |       |         |    |       |
|---------|----|-------|---------|----|-------|---------|----|-------|
| 1923-24 | .. | 36's. | 1928-29 | .. | 26's. | 1933-34 | .. | 30's. |
| 1924-25 | .. | 20's. | 1929-30 | .. | 32's. | 1934-35 | .. | 33's. |
| 1925-26 | .. | 30's. | 1930-31 | .. | 35's. | 1935-36 | .. | 30's. |
| 1926-27 | .. | 38's. | 1931-32 | .. | 29's. | 1936-37 | .. | 30's. |
| 1927-28 | .. | 38's. | 1932-33 | .. | 30's. | 1937-38 | .. | 38's. |

| Sample No. | Season. | Date of Spinning. | WASTE PERCENTAGES. |                 |                 | RING FRAME PARTICULARS.* |                                           |                            |         |                 |                |                 |                            |                     |                | YARN TEST RESULTS.          |                        |                     |         |                 |                   |             |                |         |                 | TEMPERATURE AND HUMIDITY (%). |                      |                |                             |                 |                |                        |                 |               |                             |                 |                |                        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |         |
|------------|---------|-------------------|--------------------|-----------------|-----------------|--------------------------|-------------------------------------------|----------------------------|---------|-----------------|----------------|-----------------|----------------------------|---------------------|----------------|-----------------------------|------------------------|---------------------|---------|-----------------|-------------------|-------------|----------------|---------|-----------------|-------------------------------|----------------------|----------------|-----------------------------|-----------------|----------------|------------------------|-----------------|---------------|-----------------------------|-----------------|----------------|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-------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|            |         |                   | Blow Room Loss.    | Card Room Loss. | Spiraling Loss. | Total Loss.              | Yarn Breakages per 100 spindles per hour. | Front Roller Speed, R.P.M. | Draft.  | Turns per Inch. | LEA.           |                 |                            | BALISTO.            |                |                             | SINGLE TURNED.         |                     |         |                 |                   |             |                | Counts. | Strength (lbs.) | Strength Irregularity (%).    | Weakness Percentage. | Extension (%). | Extension Irregularity (%). | Evenness Class. | Neps per yard. | Turns per Inch Actual. | Spiraling Room. | Testing Room. |                             |                 |                |                        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          | 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|            |         |                   |                    |                 |                 |                          |                                           |                            |         |                 | Counts Actual. | Strength (lbs.) | Strength Irregularity (%). | Count-Work Product. | Counts Actual. | Work of Rupture (inch-lbs.) | Work Irregularity (%). | Count-Work Product. | Counts. | Strength (ozs.) | Irregularity (%). | Percentage. | Extension (%). |         |                 |                               |                      |                |                             |                 |                |                        |                 |               | Extension Irregularity (%). | Evenness Class. | Neps per yard. | Turns per Inch Actual. |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          | 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| 1          | 2       | 3                 | 1                  | 5               | 0               | 7                        | 8                                         | 0                          | 10      | 11              | 12             | 13              | 14                         | 15                  | 16             | 17                          | 18                     | 19                  | 20      | 21              | 22                | 23          | 24             | 25      | 26              | 27                            | 28                   | 29             | 30                          | 31              | 32             | Slubber                | Inter           | Rover         |                             |                 |                |                        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          | 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| 613        | 710     | 1305              | 1746               | 2204            | 2707            | 3165                     | 3610                                      | 4060/1                     | 4060/2  | 4060/3          | 4060/4         | 4060/5          | 4060/6                     | 4060/7              | 4060/8         | 4060/9                      | 4060/10                | 4060/11             | 4060/12 | 4060/13         | 4060/14           | 4060/15     | 4060/16        | 4060/17 | 4060/18         | 4060/19                       | 4060/20              | 4060/21        | 4060/22                     | 4060/23         | 4060/24        | 4060/25                | 4060/26         | 4060/27       | 4060/28                     | 4060/29         | 4060/30        | 4060/31                | 4060/32 |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |         |
| 1928-28    | 1928-29 | 1928-30           | 1928-31            | 1928-32         | 1928-33         | 1928-34                  | 1928-35                                   | 1928-36                    | 1928-37 | 1928-38         | 1928-39        | 1928-40         | 1928-41                    | 1928-42             | 1928-43        | 1928-44                     | 1928-45                | 1928-46             | 1928-47 | 1928-48         | 1928-49           | 1928-50     | 1928-51        | 1928-52 | 1928-53         | 1928-54                       | 1928-55              | 1928-56        | 1928-57                     | 1928-58         | 1928-59        | 1928-60                | 1928-61         | 1928-62       | 1928-63                     | 1928-64         | 1928-65        | 1928-66                | 1928-67 | 1928-68 | 1928-69 | 1928-70 | 1928-71 | 1928-72 | 1928-73 | 1928-74 | 1928-75 | 1928-76 | 1928-77 | 1928-78 | 1928-79 | 1928-80 | 1928-81 | 1928-82 | 1928-83 | 1928-84 | 1928-85 | 1928-86 | 1928-87 | 1928-88 | 1928-89 | 1928-90 | 1928-91 | 1928-92 | 1928-93 | 1928-94 | 1928-95 | 1928-96 | 1928-97 | 1928-98 | 1928-99 | 1928-100 | 1928-101 | 1928-102 | 1928-103 | 1928-104 | 1928-105 | 1928-106 | 1928-107 | 1928-108 | 1928-109 | 1928-110 | 1928-111 | 1928-112 | 1928-113 | 1928-114 | 1928-115 | 1928-116 | 1928-117 | 1928-118 | 1928-119 | 1928-120 | 1928-121 | 1928-122 | 1928-123 | 1928-124 | 1928-125 | 1928-126 | 1928-127 | 1928-128 | 1928-129 | 1928-130 | 1928-131 | 1928-132 | 1928-133 | 1928-134 | 1928-135 | 1928-136 | 1928-137 | 1928-138 | 1928-139 | 1928-140 | 1928-141 | 1928-142 | 1928-143 | 1928-144 | 1928-145 | 1928-146 | 1928-147 | 1928-148 | 1928-149 | 1928-150 | 1928-151 | 1928-152 | 1928-153 | 1928-154 | 1928-155 | 1928-156 | 1928-157 | 1928-158 | 1928-159 | 1928-160 | 1928-161 | 1928-162 | 1928-163 | 1928-164 | 1928-165 | 1928-166 | 1928-167 | 1928-168 | 1928-169 | 1928-170 | 1928-171 | 1928-172 | 1928-173 | 1928-174 | 1928-175 | 1928-176 | 1928-177 | 1928-178 | 1928-179 | 1928-180 | 1928-181 | 1928-182 | 1928-183 | 1928-184 | 1928-185 | 1928-186 | 1928-187 | 1928-188 | 1928-189 | 1928-190 | 1928-191 | 1928-192 | 1928-193 | 1928-194 | 1928-195 | 1928-196 | 1928-197 | 1928-198 | 1928-199 | 1928-200 | 1928-201 | 1928-202 | 1928-203 | 1928-204 | 1928-205 | 1928-206 | 1928-207 | 1928-208 | 1928-209 | 1928-210 | 1928-211 | 1928-212 | 1928-213 | 1928-214 | 1928-215 | 1928-216 | 1928-217 | 1928-218 | 1928-219 | 1928-220 | 1928-221 | 1928-222 | 1928-223 | 1928-224 | 1928-225 | 1928-226 | 1928-227 | 1928-228 | 1928-229 | 1928-230 | 1928-231 | 1928-232 | 1928-233 | 1928-234 | 1928-235 | 1928-236 | 1928-237 | 1928-238 | 1928-239 | 1928-240 | 1928-241 | 1928-242 | 1928-243 | 1928-244 | 1928-245 | 1928-246 | 1928-247 | 1928-248 | 1928-249 | 1928-250 | 1928-251 | 1928-252 | 1928-253 | 1928-254 | 1928-255 | 1928-256 | 1928-257 | 1928-258 | 1928-259 | 1928-260 | 1928-261 | 1928-262 | 1928-263 | 1928-264 | 1928-265 | 1928-266 | 1928-267 | 1928-268 | 1928-269 | 1928-270 | 1928-271 | 1928-272 | 1928-273 | 1928-274 | 1928-275 | 1928-276 | 1928-277 | 1928-278 | 1928-279 | 1928-280 | 1928-281 | 1928-282 | 1928-283 | 1928-284 | 1928-285 | 1928-286 | 1928-287 | 1928-288 | 1928-289 | 1928-290 | 1928-291 | 1928-292 | 1928-293 | 1928-294 | 1928-295 | 1928-296 | 1928-297 | 1928-298 | 1928-299 | 1928-300 | 1928-301 | 1928-302 | 1928-303 | 1928-304 | 1928-305 | 1928-306 | 1928-307 | 1928-308 | 1928-309 | 1928-310 | 1928-311 | 1928-312 | 1928-313 | 1928-314 | 1928-315 | 1928-316 | 1928-317 | 1928-318 | 1928-319 | 1928-320 | 1928-321 | 1928-322 | 1928-323 | 1928-324 | 1928-325 | 1928-326 | 1928-327 | 1928-328 | 1928-329 | 1928-330 | 1928-331 | 1928-332 | 1928-333 | 1928-334 | 1928-335 | 1928-336 | 1928-337 | 1928-338 | 1928-339 | 1928-340 | 1928-341 | 1928-342 | 1928-343 | 1928-344 | 1928-345 | 1928-346 | 1928-347 | 1928-348 | 1928-349 | 1928-350 | 1928-351 | 1928-352 | 1928-353 | 1928-354 | 1928-355 | 1928-356 | 1928-357 | 1928-358 | 1928-359 | 1928-360 | 1928-361 | 1928-362 | 1928-363 | 1928-364 | 1928-365 | 1928-366 | 1928-367 | 1928-368 | 1928-369 | 1928-370 | 1928-371 | 1928-372 | 1928-373 | 1928-374 | 1928-375 | 1928-376 | 1928-377 | 1928-378 | 1928-379 | 1928-380 | 1928-381 | 1928-382 | 1928-383 | 1928-384 | 1928-385 | 1928-386 | 1928-387 | 1928-388 | 1928-389 | 1928-390 | 1928-391 | 1928-392 | 1928-393 | 1928-394 | 1928-395 | 1928-396 | 1928-397 | 1928-398 | 1928-399 | 1928-400 | 1928-401 | 1928-402 | 1928-403 | 1928-404 | 1928-405 | 1928-406 | 1928-407 | 1928-408 | 1928-409 | 1928-410 | 1928-411 | 1928-412 | 1928-413 | 1928-414 | 1928-415 | 1928-416 | 1928-417 | 1928-418 | 1928-419 | 1928-420 | 1928-421 | 1928-422 | 1928-423 | 1928-424 | 1928-425 | 1928-426 | 1928-427 | 1928-428 | 1928-429 | 1928-430 | 1928-431 | 1928-432 | 1928-433 | 1928-434 | 1928-435 | 1928-436 | 1928-437 | 1928-438 | 1928-439 | 1928-440 | 1928-441 | 1928-442 | 1928-443 | 1928-444 | 1928-445 | 1928-446 | 1928-447 | 1928-448 | 1928-449 | 1928-450 | 1928-451 | 1928-452 | 1928-453 | 1928-454 | 1928-455 | 1928-456 | 1928-457 | 1928-458 | 1928-459 | 1928-460 | 1928-461 | 1928-462 | 1928-463 | 1928-464 | 1928-465 | 1928-466 | 1928-467 | 1928-468 | 1928-469 | 1928-470 | 1928-471 | 1928-472 | 1928-473 | 1928-474 | 1928-475 | 1928-476 | 1928-477 | 1928-478 | 1928-479 | 1928-480 | 1928-481 | 1928-482 | 1928-483 | 1928-484 | 1928-485 | 1928-486 | 1928-487 | 1928-488 | 1928-489 | 1928-490 | 1928-491 | 1928-492 | 1928-493 | 1928-494 | 1928-495 | 1928-496 | 1928-497 | 1928-498 | 1928-499 | 1928-500 | 1928-501 | 1928-502 | 1928-503 | 1928-504 | 1928-505 | 1928-506 | 1928-507 | 1928-508 | 1928-509 | 1928-510 | 1928-511 | 1928-512 | 1928-513 | 1928-514 | 1928-515 | 1928-516 | 1928-517 | 1928-518 | 1928-519 | 1928-520 | 1928-521 | 1928-522 | 1928-523 | 1928-524 | 1928-525 | 1928-526 | 1928-527 | 1928-528 | 1928-529 | 1928-530 | 1928-531 | 1928-532 | 1928-533 | 1928-534 | 1928-535 | 1928-536 | 1928-537 | 1928-538 | 1928-539 | 1928-540 | 1928-541 | 1928-542 | 1928-543 | 1928-544 | 1928-545 | 1928-546 | 1928-547 | 1928-548 | 1928-549 | 1928-550 | 1928-551 | 1928-552 | 1928-553 | 1928-554 | 1928-555 | 1928-556 | 1928-557 | 1928-558 | 1928-559 | 1928-560 | 1928-561 | 1928-562 | 1928-563 | 1928-564 | 1928-565 | 1928-566 | 1928-567 | 1928-568 | 1928-569 | 1928-570 | 1928-571 | 1928-572 | 1928-573 | 1928-574 | 1928-575 | 1928-576 | 1928-577 | 1928-578 | 1928-579 | 1928-580 | 1928-581 | 1928-582 | 1928-583 | 1928-584 | 1928-585 | 1928-586 | 1928-587 | 1928-588 | 1928-589 | 1928-590 | 1928-591 | 1928-592 | 1928-593 | 1928-594 | 1928-595 | 1928-596 | 1928-597 | 1928-598 | 1928-599 | 1928-600 | 1928-601 | 1928-602 | 1928-603 | 1928-604 | 1928-605 | 1928-606 | 1928-607 | 1928-608 | 1928-609 | 1928-610 | 1928-611 | 1928-612 | 1928-613 | 1928-614 | 1928-615 | 1928-616 | 1928-617 | 1928-618 | 1928-619 | 1928-620 | 1928-621 | 1928-622 | 1928-623 | 1928-624 | 1928-625 | 1928-626 | 1928-627 | 1928-628 | 1928-629 | 1928-630 | 1928-631 | 1928-632 | 1928-633 | 1928-634 | 1928-635 | 1928-636 | 1928-637 | 1928-638 | 1928-639 | 1928-640 | 1928-641 | 1928-642 | 1928-643 | 1928-644 | 1928-645 | 1928-646 | 1928-647 | 1928-648 | 1928-649 | 1928-650 | 1928-651 | 1928-652 | 1928-653 | 1928-654 | 1928-655 | 1928-656 | 1928-657 | 1928-658 | 1928-659 | 1928-660 | 1928-661 | 1928-662 | 1928-663 | 1928-664 | 1928-665 | 1928-666 | 1928-667 | 1928-668 | 1928-669 | 1928-670 | 1928-671 | 1928-672 | 1928-673 | 1928-674 | 1928-675 | 1928-676 | 1928-677 | 1928-678 | 1928-679 | 1928-680 | 1928-681 | 1928-682 | 1928-683 | 1928-684 | 1928-685 | 1928-686 | 1928-687 | 1928-688 | 1928-689 | 1928-690 | 1928-691 | 1928-692 | 1928-693 | 1928-694 | 1928-695 | 1928-696 | 1928-697 | 1928-698 | 1928-699 | 1928-700 | 1928-701 | 1928-702 | 1928-703 | 1928-704 | 1928-705 | 1928-706 | 1928-707 | 1928-708 | 1928-709 | 1928-710 | 1928-711 | 1928-712 | 1928-713 | 1928-714 | 1928-715 | 1928-716 | 1928-717 | 1928-718 | 1928-719 | 1928-720 | 1928-721 | 1928-722 | 1928-723 | 1928-724 | 1928-725 | 1928-726 | 1928-727 | 1928-728 | 1928-729 | 1928-730 | 1928-731 | 1928-732 | 1928-733 | 1928-734 | 1928-735 | 1928-736 | 1928-737 | 1928-738 | 1928-73 |

## 3.—SURAT 1027 A.L.F.

| Seasons.             | Seasons.                   | Seasons.                   |
|----------------------|----------------------------|----------------------------|
| 24 (Sample No. 104). | 1928-29 (Sample No. 487).  | 1933-34 (Sample No. 2244). |
| 25 (Sample No. 83).  | 1929-30 (Sample No. 716).  | 1934-35 (Sample No. 2761). |
| 26 (Sample No. 116). | 1930-31 (Sample No. 1018). | 1935-36 (Sample No. 3157). |
| 27 (Sample No. 246). | 1931-32 (Sample No. 1313). | 1936-37 (Sample No. 3594). |
| 28 (Sample No. 363). | 1932-33 (Sample No. 1735). | 1937-38 (Sample No. 4050). |

## I.—AGRICULTURAL DETAILS.

*Botanical species* :—*Gossypium herbaceum*.

*History* :—Derived from a hybrid (1027) originally made at Kirkee Farm in 1901 between *Kumpta* and *Goghari* cottons: two specially good plants (1027A) were isolated in 1904, and continued selection gave in 1907 two new types—1027A, long and coarse, and 1027A, long and fine, the latter being styled 1027 A.L.F. in 1910-11. The selection work was continued thereafter, and the present 1027 A.L.F. is a pure line from an individual selection made in 1917-18. (References: Annual Reports, Surat Agricultural Station, 1907-15; Memoir of the Department of Agriculture in India, Botanical Series, Vol. XII. No. 5, 1924.)

*District of growth* :—Broach tract, i.e., Southern Gujarat, Broach and Surat districts and adjacent parts of Baroda State (Navsari district). The particular samples used in these tests have been grown on the Government Farm, Surat.

*Growing period* :—Sown in the third week in June, and picked from mid-March onwards.

*Soil* :—Black cotton soil, supposed to be the result of an alluvium brought down by the Tapti and the Nerbudda rivers.

*Rainfall* :—30 to 40 inches annually; 52.4 inches in 1934-35; 41.71 inches in 1935-36; 54.7 inches in 1937-38.

*Temperature* :—Means, 85° F. (April to August); 81° F. (September to November).

*Plant particulars (average values)* :—

- Bolls per plant : 35 (spacing : 36" × 36").
- Seeds per boll : 22 ( " : 60" × 24" in 1933-34).
- Weight of seed : 60 milligrammes.
- Weight of lint per seed : 30 milligrammes.
- Ginning percentage : 33.3.

*Yield of seed-cotton* :—In 1931-32 the yield was 676 lbs. per acre; in 1932-33, 854 lbs. per acre; in 1933-34, 742 lbs. per acre on Surat Farm; 751 lbs. in 1934-35; 583 lbs. in 1935-36 (in Cotton Breeder's area); 607 lbs. in 1936-37 in Cotton Breeder's area; 424 lbs. in 1937-38.

*Area under cultivation* :—

|          |                |            |                |            |                |
|----------|----------------|------------|----------------|------------|----------------|
| 23-24 .. | 250,000 acres. | 1929-30 .. | 450,000 acres. | 1935-36 .. | 263,000 acres. |
| 25-26 .. | 119,000 "      | 1931-32 .. | 230,700 "      | 1936-37 .. | 325,000 "      |
| 26-27 .. | 405,000 "      | 1932-33 .. | 238,540 "      | 1937-38 .. | 272,000 "      |
| 27-28 .. | 250,000 "      | 1933-34 .. | 234,700 "      |            |                |
| 28-29 .. | 481,000 "      | 1934-35 .. | 356,280 "      |            |                |

above figures relate to the area under seed of known origin; the total area is probably greater.

## II.—GRADER'S REPORT.

|            | 1928-29.         | 1929-30.   | 1930-31.    | 1931-32.         | 1932-33.     | 1933-34.    | 1934-35.       | 1935-36.       | 1936-37.                                        | 1937-38.         |
|------------|------------------|------------|-------------|------------------|--------------|-------------|----------------|----------------|-------------------------------------------------|------------------|
| under ..   | Broach ..        | Broach ..  | Broach ..   | Broach ..        | Broach ..    | Broach ..   | Broach ..      | Broach ..      | Broach A/M 1937.                                | Broach.          |
| .. ..      | Extra Superfine. | Superfine. | Superfine   | Extra Superfine. | Superfine.   | Superfine.  | Superfine.     | Superfine.     | Superfine ..                                    | Extra Superfine. |
| .. ..      | White ..         | White ..   | White ..    | White ..         | White ..     | White ..    | Bright; White. | Bright; White. | White ..                                        | Pearly.          |
| .. ..      | Full 1 inch.     | 1 inch.    | 1 1/2 inch. | 1 1/2 inch.      | Full 1 inch. | 15/16 inch. | 15/16 inch.    | 15/16 inch.    | Full 1 inch.                                    | 15/16 inch.      |
| .. ..      | Good ..          | Good ..    | Fair ..     | Fair ..          | Good ..      | Fair ..     | Good ..        | Very Good ..   | Very good ..                                    | Good.            |
| below con- | Good ..          | Good ..    | Fair ..     | Fair ..          | Fair ..      | Fair ..     | Regular ..     | Regular ..     | Regular ..                                      | Regular.         |
| on ..      | Rs. 80 on.       | Rs. 100 on | Rs. 75 on.  | Rs. 65 on.       | Rs. 45 on.   | Rs. 70 on.  | Rs. 80 on.     | Rs. 65 on ..   | Rs. 90 on ..                                    | Rs. 70 on.       |
| on ..      | Rs. 370 ..       | Rs. 250 .. | Rs. 180 ..  | Rs. 170 ..       | Rs. 180 ..   | Rs. 190 ..  | Rs. 232 ..     | Rs. 190 ..     | Rs. 220 ..                                      | Rs. 145.         |
| .. ..      | 18-3-29 ..       | 16-4-30 .. | 16-4-31 ..  | 6-5-32 ..        | 12-4-33 ..   | 30-4-34 ..  | 3-7-35 ..      | 1-5-36 ..      | 15-5-37 ..                                      | 30- -38.         |
| .. ..      | ..               | ..         | ..          | ..               | ..           | ..          | ..             | ..             | Not particularly more silky than average Surat. | ..               |

## III.—FIBRE PARTICULARS.

## 1. Fibre-Length Distribution (Balls Sorter):—

|                                                          | Percentage. |          |          |          |          |          |          |          |          |          |  |  |
|----------------------------------------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
|                                                          | 1924-25.    | 1929-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |  |  |
| Mean group-length in eighths of an inch.                 |             |          |          |          |          |          |          |          |          |          |  |  |
| 2                                                        | 0.3         | 0.1      | 1.8      | 0.2      | 1.8      | 1.6      | 0.5      | 0.1      | 1.0      | 0.4      |  |  |
| 3                                                        | 1.4         | 1.0      | 3.0      | 2.5      | 3.2      | 2.7      | 1.4      | 1.0      | 2.5      | 1.0      |  |  |
| 4                                                        | 2.5         | 1.0      | 3.0      | 4.5      | 3.2      | 4.7      | 2.0      | 2.0      | 4.0      | 2.2      |  |  |
| 5                                                        | 5.2         | 4.0      | 6.0      | 0.7      | 6.0      | 4.7      | 4.4      | 3.5      | 7.0      | 3.0      |  |  |
| 6                                                        | 9.9         | 9.2      | 11.3     | 11.8     | 11.1     | 8.1      | 10.3     | 7.5      | 13.0     | 8.0      |  |  |
| 7                                                        | 21.0        | 20.3     | 23.5     | 22.3     | 19.2     | 15.7     | 10.1     | 16.8     | 22.0     | 17.2     |  |  |
| 8                                                        | 31.3        | 32.3     | 32.2     | 24.3     | 30.3     | 23.2     | 30.3     | 28.6     | 29.6     | 20.0     |  |  |
| 9                                                        | 20.8        | 22.3     | 16.2     | 14.4     | 20.8     | 21.0     | 22.1     | 21.7     | 16.0     | 20.3     |  |  |
| 10                                                       | 6.8         | 7.1      | 4.7      | 5.4      | 6.1      | 11.5     | 7.0      | 12.2     | 4.5      | 0.2      |  |  |
| 11                                                       | 1.0         | 1.8      | 1.3      | 1.0      | 1.5      | 4.3      | 2.0      | 2.6      | 1.4      | 2.5      |  |  |
| 12                                                       | ..          | ..       | ..       | ..       | ..       | 0.1      | ..       | ..       | ..       | ..       |  |  |
| 2. Fibre-Length (inch):—                                 |             |          |          |          |          |          |          |          |          |          |  |  |
| (a) By Balls Sorter .. .. .                              | 0.05        | 0.97     | 0.93     | 0.00     | 0.94     | 1.00     | 0.99     | 1.00     | 0.91     | 0.90     |  |  |
| (b) By Baer Sorter .. .. .                               | 0.95        | 0.97     | 0.95     | 0.89     | 0.91     | 0.98     | 0.93     | 1.02     | 0.93     | 0.97     |  |  |
| 3. Fibre-Length Irregularity (%):—                       |             |          |          |          |          |          |          |          |          |          |  |  |
| (a) By Balls Sorter .. .. .                              | ..          | 12.9     | 16.8     | 19.7     | 18.5     | 17.2     | 10.5     | 13.0     | 21.4     | 14.2     |  |  |
| (b) By Baer Sorter .. .. .                               | ..          | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       |  |  |
| 4. Fibre-Weight per inch (millimoth of an ounce):—       |             |          |          |          |          |          |          |          |          |          |  |  |
| (a) By Balls Sorter .. .. .                              | 0.210       | 0.180    | 0.201    | 0.175    | 0.190    | 0.169    | 0.183    | 0.168    | 0.193    | 0.155    |  |  |
| (b) By Baer Sorter .. .. .                               | ..          | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       |  |  |
| 5. Fibre-Strength (oz.):—                                |             |          |          |          |          |          |          |          |          |          |  |  |
| (a) By Balls Sorter .. .. .                              | 0.170*      | 0.165    | 0.183    | 0.188    | 0.190    | 0.171    | 0.177    | 0.156    | 0.170    | 0.151    |  |  |
| (b) By Baer Sorter .. .. .                               | ..          | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       |  |  |
| 6. Fibre-Strength per unit fibre-weight per inch .. .. . | 0.82*       | 0.05     | 0.03     | 1.05     | 1.04     | 1.08     | 1.02     | 0.93     | 0.89     | 0.94     |  |  |
| 7. Fibre-Rigidity (millimoth of an ounce, square inch):— | 0.140*      | 0.157    | 0.102    | 0.129    | ..       | ..       | ..       | ..       | ..       | ..       |  |  |
| 8. Ribbon-Width (thousandth of an inch) .. .. .          | 0.72        | 0.74     | 0.67     | 0.66     | 0.74     | ..       | ..       | ..       | ..       | ..       |  |  |
| 9. Convolution per inch .. .. .                          | 97          | 45       | 63       | 61       | 62       | ..       | ..       | ..       | ..       | ..       |  |  |
| 10. Maturity Test Results (%):—                          |             |          |          |          |          |          |          |          |          |          |  |  |
| (a) Mature .. .. .                                       | ..          | ..       | ..       | ..       | ..       | ..       | 50       | 45       | 68       | 46       |  |  |
| (b) Half-mature .. .. .                                  | ..          | ..       | ..       | ..       | ..       | ..       | 21       | 23       | 17       | 27       |  |  |
| (c) Immature .. .. .                                     | ..          | ..       | ..       | ..       | ..       | ..       | 30       | 27       | 16       | 27       |  |  |

\* Mean of three seasons, 1929-30.

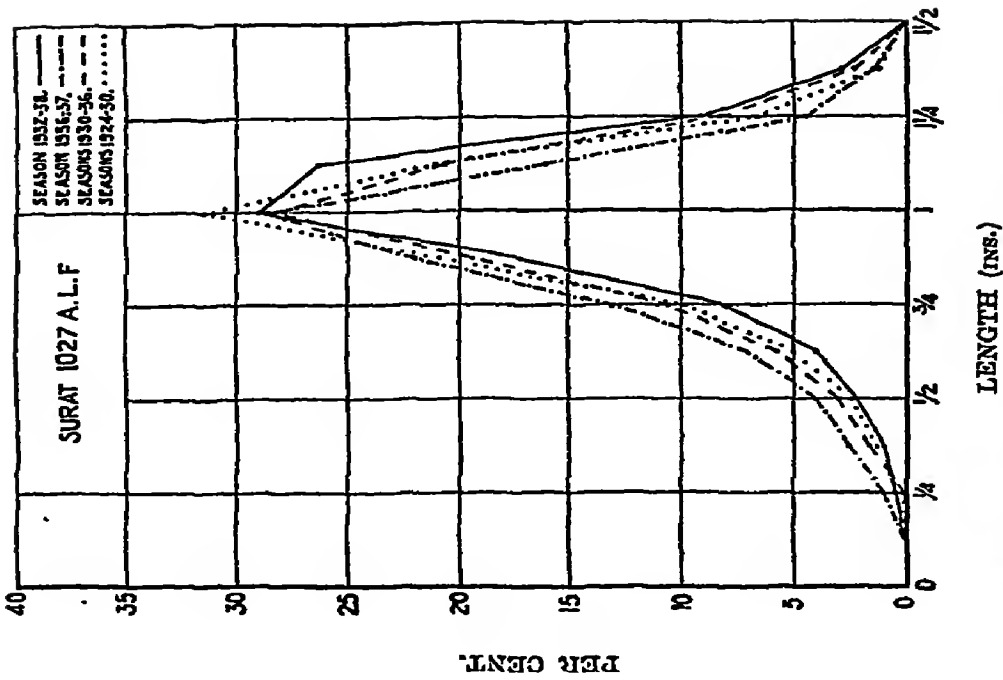


Fig. 3.—Sorter Diagrams for Surat 1027 A.L.F.

## IV.—SPINNING TESTS.

*Treatment :—*

(a) *Blow-room* :—Upto 1933-34 :—Lattice Feeder, Crighton (once only), Hopper, Scutcher (3 times) ; 1932-33 and 1933-34 twice through the Crighton ; 1927-28 direct through the Crighton (once only).

1934-35 onwards :—Hopper bale opener, Horizontal cleaner, Crighton, Gridded dust trunks, Cage exhaust, Hopper Feeder, Scutcher (3 times).

(b) *Card-room* :—Upto 1934-35 :—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards :—As above but spun from single hank roving on Ring Frame No. 3 which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

*Spinning Master's Report :—*

| Season.                    | 1928-29.                                                                  | 1929-30.                                                                | 1930-31.                 | 1931-32.      | 1932-33.            | 1933-34.       | 1934-35.                    | 1935-36.            | 1936-37.                       | 1937-38.                    |
|----------------------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------|---------------|---------------------|----------------|-----------------------------|---------------------|--------------------------------|-----------------------------|
| Colour ..                  | White; very bright.                                                       | White; very bright.                                                     | White; very bright.      | White ..      | White; bright.      | White; bright. | White creamy white; bright. | White; bright.      | White; bright.                 | White creamy white; bright. |
| Cleanliness ..             | Clean ..                                                                  | Very clean ..                                                           | Perfectly clean.         | Clean ..      | Very clean ..       | Very clean ..  | Clean ..                    | Clean ..            | Clean; contains a little leaf. | Clean.                      |
| Feel ..                    | Soft and silky                                                            | Very soft ..                                                            | Good soft ..             | Soft silky .. | Very good ..        | Silky bodied   | Good ..                     | Smooth and bodied.  | Good smooth.                   | Good soft.                  |
| Spinning and neppiness.    | Well-ginned.                                                              | Well-ginned.                                                            | Very well-ginned.        | Well-ginned.  | Well-ginned.        | Well-ginned.   | Well-ginned.                | Well-ginned.        | Well-ginned.                   | Well-ginned.                |
| Neppiness ..               | 0.27 per cent. cut seed.                                                  | ..                                                                      | ..                       | ..            | ..                  | ..             | ..                          | ..                  | ..                             | ..                          |
| Card Silver ..             | ..                                                                        | ..                                                                      | Clean ..                 | Clean ..      | Clean ..            | Clean ..       | Clean ..                    | Clean ..            | Good clean.                    | Clean and soft.             |
| Card-Web ..                | ..                                                                        | ..                                                                      | First class ..           | Very good ..  | Even and nepp-free. | Good ..        | Even and nepp-free.         | Even and nepp-free. | A little neppy.                | A soft trifle neppy.        |
| Weight of ten flat strips. | ..                                                                        | 0.75 grams.                                                             | 7.9 grams ..             | 12.0 grams.   | 12.8 grams.         | 13.0 grams.    | 17.8 grams.                 | 13.6 grams.         | 11.6 grams.                    | 10.3 grams.                 |
| Remarks ..                 | Plenty of clinging; staple even and very strong; a very desirable cotton. | Staple strong & regular in length; a very desirable & showy web cotton. | A very desirable cotton. | ..            | ..                  | ..             | ..                          | ..                  | ..                             | ..                          |

*Spinning Test Details and Results* :—See Table 3 on page 24.

Card Production for Sample 104 :—11.8 lb. per hour.

Ring Frame Production for 30's B, Sample 104 :—3.67 oz. per spindle per 10 hours.

## V.—REMARKS.

(i) *Fibre*.—The mean fibre-length of this cotton is about 0.95", but since 1933-34 has registered fairly large fluctuations. The fibre-length irregularity of this cotton is generally rather high. The mean fibre-weight per inch is unusually low in 1933-34, 1935-36 and 1937-38 and high in 1930-31 and 1936-37. The fibre-strength shows some improvement though the 1935-36 sample is not so strong as its predecessors. The fibre-strength per unit fibre-weight per inch rose to its peak value in 1933-34, but since then has declined steadily. The fibre-rigidity and the number of convolutions per inch both show considerable seasonal variation. The 1937-38 sample is superior to its predecessor in respect of mean length and length regularity, but it has a lower fibre strength and contains a much smaller percentage of mature hairs.

(ii) *Waste*.—This is a clean cotton; the blow-room loss being quite low in most seasons. The card-room loss lies between 7 and 8 per cent. and is nearly the same in all seasons.

(iii) *Breakages*.—Yarn breakages in the ring frame are generally few in 20's and 30's counts, but fairly numerous in 34's and 40's counts. They were, however, fairly numerous in 20's and 30's counts of the 1932-33 cotton.

(iv) *Yarns*.—Yarns spun from this cotton are either very even to even or even in 20's and even to fairly even in 30's counts. They are, however, inclined to be somewhat neppy. The yarn-strength results are very poor in 1925-26 and again in 1936-37, better than usual in 1929-30 and 1935-36 and best of all in 1933-34 and 1937-38.

(v) *Conclusion*.—The 1937-38 sample gave a much better performance than its predecessor. The following are the highest standard warp counts for which this cotton has been adjudged suitable :—

|                  |                  |                  |                  |                  |
|------------------|------------------|------------------|------------------|------------------|
| 1922-24 .. 30's. | 1926-27 .. 32's. | 1929-30 .. 34's. | 1932-33 .. 31's. | 1935-36 .. 34's. |
| 1924-25 .. 32's. | 1927-28 .. 30's. | 1930-31 .. 29's. | 1933-34 .. 37's. | 1936-37 .. 26's. |
| 1925-26 .. 26's. | 1928-29 .. 32's. | 1931-32 .. 30's. | 1934-35 .. 34's. | 1937-38 .. 38's. |

Slubber .. 0.70 .. 30's .. 9,750 r.p.m.  
 Inter .. 1.72 .. 40's .. 9,800 r.p.m.  
 Rover .. 4.88 .. 40's .. 9,800 r.p.m.

| Sample No. | Sec. no. | Date of Spinning. | Counts Nominal. | WASTE PERCENTAGES. |                 |                |             | RING FRAME PARTICULARS.*         |                            |        |                 | YARN TEST RESULTS. |               |                            |                |                |                            |                       |                     |                |                 | TEMPERATURE (°F.). | RELATIVE HUMIDITY (%). |                  |                      |                |                            |                 |                 |                        |
|------------|----------|-------------------|-----------------|--------------------|-----------------|----------------|-------------|----------------------------------|----------------------------|--------|-----------------|--------------------|---------------|----------------------------|----------------|----------------|----------------------------|-----------------------|---------------------|----------------|-----------------|--------------------|------------------------|------------------|----------------------|----------------|----------------------------|-----------------|-----------------|------------------------|
|            |          |                   |                 | Blow Room Loss.    | Card Room Loss. | Spinning Loss. | Total Loss. | Yarn Breakages per 100 spindles. | Front Roller Speed, R.P.M. | Draft. | Turns per Inch. | I.P.A.             |               |                            | RAMBRO.        |                |                            |                       |                     | SINGLE THREAD. |                 |                    |                        |                  |                      |                |                            |                 |                 |                        |
|            |          |                   |                 |                    |                 |                |             |                                  |                            |        |                 | Counts Actual.     | Strength lbs. | Strength Irregularity (%). | Count-Product. | Counts Actual. | Work of Rupture (Inch-lb.) | Work Irregularity (%) | Count-Work Product. | Counts.        | Strength (ozs.) |                    |                        | Irregularity (%) | Weakness Percentage. | Extension (%). | Extension Irregularity (%) | Avenness class. | Neeps per yard. | Turns per Inch Actual. |
| 457        | 1929-30  | 18-3-20           | 20A             | 5.3                | 7.5             | 0.4            | 13.2        | 7                                | 185                        | 4.33   | 16.85           | 19.7               | 82.2          | 0.0                        | 1,010          | 16.8           | 133.0                      | 3.4                   | 2,045               | 20.3           | 11.0            | 0.7                | 1.5                    | 5.8              | 0.0                  | 2              | 1.5                        | 10.3            | 86              | 61                     |
| 716        | 1929-30  | 18-4-30           | "               | 4.0                | 7.5             | 0.2            | 11.0        | 17                               | 190                        | 4.44   | 16.85           | 19.5               | 85.8          | 4.0                        | 1,008          | 16.8           | 130.1                      | 2.6                   | 2,076               | 19.0           | 12.5            | 0.2                | 0.7                    | 7.0              | 7.0                  | 3              | 1.7                        | 10.3            | 88              | 62                     |
| 1018       | 1930-31  | 8-1-31            | "               | 3.3                | 7.4             | 0.0            | 10.8        | 8                                | 200                        | 4.55   | 16.85           | 20.0               | 91.1          | 5.0                        | 1,021          | 20.2           | 110.0                      | 3.0                   | 2,076               | 20.0           | 11.8            | 11.6               | 3.9                    | 6.4              | 7.8                  | 3              | 1.9                        | 10.3            | 89              | 63                     |
| 1313       | 1931-32  | 8-1-31            | "               | 4.7                | 6.0             | 0.5            | 11.0        | 10                               | 190                        | 4.32   | 16.85           | 20.0               | 83.1          | 5.4                        | 1,021          | 20.2           | 110.0                      | 3.0                   | 2,076               | 20.0           | 11.8            | 11.6               | 3.9                    | 6.4              | 7.8                  | 3              | 1.9                        | 10.3            | 89              | 64                     |
| 2941       | 1933-37  | 2-1-35            | "               | 3.6                | 6.8             | 0.4            | 10.8        | 26                               | 203                        | 4.35   | 16.85           | 20.4               | 105.1         | 5.6                        | 2,050          | 16.4           | 147.8                      | 4.8                   | 2,067               | 19.0           | 13.8            | 11.0               | 2.8                    | 6.5              | 8.6                  | 3              | 2.0                        | 10.3            | 89              | 67                     |
| 2701       | 1931-35  | 2-1-35            | "               | 3.0                | 6.3             | 0.3            | 9.6         | 10                               | 192                        | 4.22   | 16.85           | 20.3               | 105.1         | 4.6                        | 2,026          | 16.2           | 162.8                      | 4.2                   | 2,032               | 20.0           | 13.0            | 9.9                | 3.2                    | 7.3              | 8.8                  | 3              | 2.0                        | 10.3            | 87              | 70                     |
| 3157       | 1934-36  | 6-4-36            | "               | 3.0                | 6.8             | 0.4            | 9.0         | 8                                | 184                        | 4.46   | 16.85           | 20.0               | 87.2          | 4.2                        | 1,925          | 20.0           | 120.4                      | 3.0                   | 2,088               | 20.0           | 12.0            | 9.8                | 1.0                    | 6.6              | 8.6                  | 3              | 2.0                        | 10.3            | 89              | 70                     |
| 3594       | 1936-37  | 15-4-37           | "               | 5.2                | 6.0             | 0.4            | 12.0        | 13                               | 203                        | 4.21   | 16.85           | 20.0               | 92.0          | 5.2                        | 1,626          | 16.6           | 125.4                      | 3.1                   | 2,408               | 20.0           | 11.1            | 12.1               | 4.2                    | 6.6              | 8.6                  | 3              | 2.0                        | 10.3            | 90              | 68                     |
| 4050/1     | 1937-38  | 11-5-38           | "               | 4.4                | 7.3             | 0.4            | 12.0        | 0                                | 214                        | 4.46   | 16.85           | 20.0               | 92.0          | 5.2                        | 1,608          | 20.6           | 130.8                      | 2.8                   | 2,401               | 21.2           | 11.8            | 8.8                | 0.0                    | 6.8              | 5.9                  | 3              | 2.0                        | 10.3            | 91              | 69                     |
| 4050/2     | 1937-38  | 11-5-38           | "               | 4.3                | 7.3             | 0.5            | 11.7        | 5                                | 214                        | 4.40   | 16.85           | 20.0               | 100.5         | 0.4                        | 2,000          | 20.3           | 144.0                      | 5.0                   | 2,023               | 20.6           | 12.2            | 10.2               | 1.2                    | 6.8              | 6.8                  | 3              | 2.0                        | 10.3            | 90              | 68                     |
| 716        | 1929-30  | 26-4-30           | 20D             | "                  | "               | "              | "           | 2                                | 193                        | 4.05   | 17.08           | 20.0               | 80.0          | 4.1                        | 1,040          | 19.8           | 120.4                      | 3.7                   | 2,502               | 20.0           | 12.4            | 8.5                | 0.5                    | 0.0              | 8.0                  | 3              | 2.5                        | 17.3            | 91              | 63                     |
| 1018       | 1930-31  | 0-4-31            | "               | "                  | "               | "              | "           | 8                                | 195                        | 4.50   | 17.08           | 20.1               | 87.0          | 4.1                        | 1,749          | 20.0           | 121.3                      | 3.7                   | 2,502               | 20.2           | 12.0            | 10.8               | 2.5                    | 0.0              | 8.0                  | 3              | 2.5                        | 17.3            | 88              | 64                     |
| 1313       | 1931-32  | 9-5-32            | "               | "                  | "               | "              | "           | 10                               | 191                        | 4.38   | 17.08           | 19.7               | 86.7          | 3.0                        | 1,707          | 20.2           | 120.3                      | 3.4                   | 2,400               | 20.4           | 12.0            | 10.8               | 2.6                    | 0.0              | 8.1                  | 3              | 2.6                        | 17.5            | 89              | 67                     |
| 2941       | 1932-37  | 12-4-37           | "               | 3.0                | 7.1             | 0.6            | 11.3        | 30                               | 190                        | 4.30   | 17.08           | 20.0               | 83.0          | 5.0                        | 1,645          | 16.6           | 144.1                      | 3.9                   | 2,400               | 20.4           | 12.2            | 11.2               | 3.6                    | 0.0              | 7.1                  | 3              | 2.6                        | 17.5            | 89              | 68                     |
| 3157       | 1934-35  | 2-1-31            | "               | "                  | "               | "              | "           | 23                               | 200                        | 4.40   | 17.08           | 20.0               | 106.3         | 5.7                        | 2,400          | 20.2           | 145.5                      | 3.5                   | 2,300               | 20.0           | 14.2            | 9.0                | 1.6                    | 0.0              | 7.3                  | 3              | 2.6                        | 17.2            | 86              | 68                     |
| 3594       | 1936-36  | 6-5-36            | "               | "                  | "               | "              | "           | 28                               | 198                        | 4.17   | 17.08           | 19.1               | 111.7         | 4.6                        | 2,133          | 16.0           | 178.7                      | 4.5                   | 2,305               | 19.4           | 15.6            | 6.7                | 1.6                    | 0.0              | 7.0                  | 3              | 2.6                        | 17.2            | 86              | 72                     |
| 4050/1     | 1937-38  | 17-5-37           | "               | "                  | "               | "              | "           | 10                               | 206                        | 4.36   | 17.08           | 20.0               | 99.1          | 4.1                        | 1,982          | 20.1           | 131.8                      | 3.0                   | 2,617               | 20.6           | 11.4            | 10.0               | 2.2                    | 0.5              | 8.5                  | 3              | 2.2                        | 17.2            | 88              | 71                     |
| 4050/2     | 1937-38  | 11-5-38           | "               | "                  | "               | "              | "           | 0                                | 217                        | 4.40   | 17.08           | 20.2               | 103.2         | 4.5                        | 2,007          | 19.8           | 151.2                      | 4.5                   | 2,004               | 20.0           | 13.0            | 7.7                | 0.5                    | 0.0              | 7.6                  | 3              | 2.2                        | 17.4            | 86              | 67                     |
| 457        | 1923-28  | 18-3-20           | 30              | "                  | "               | "              | "           | 0                                | 149                        | 0.47   | 21.80           | 20.0               | 48.0          | 0.2                        | 1,430          | 20.7           | 68.0                       | 4.9                   | 1,430               | 20.3           | 7.2             | 12.2               | 3.3                    | 5.2              | 11.0                 | 4              | 2.0                        | 21.0            | 80              | 63                     |
| 716        | 1929-30  | 18-4-30           | "               | "                  | "               | "              | "           | 22                               | 167                        | 0.79   | 21.80           | 20.0               | 50.9          | 0.5                        | 1,647          | 20.7           | 86.8                       | 4.9                   | 1,647               | 20.3           | 7.2             | 12.2               | 3.3                    | 5.2              | 11.0                 | 4              | 2.0                        | 21.0            | 80              | 64                     |
| 1018       | 1930-31  | 0-4-31            | "               | "                  | "               | "              | "           | 35                               | 160                        | 0.81   | 21.80           | 20.4               | 48.4          | 4.0                        | 1,686          | 20.6           | 88.0                       | 2.9                   | 1,686               | 20.3           | 7.0             | 11.5               | 4.0                    | 5.8              | 10.6                 | 4              | 2.0                        | 21.0            | 80              | 65                     |
| 1313       | 1931-32  | 10-5-32           | "               | "                  | "               | "              | "           | 8                                | 168                        | 0.35   | 21.80           | 20.0               | 51.0          | 0.0                        | 1,390          | 20.6           | 88.0                       | 2.4                   | 1,403               | 20.5           | 8.0             | 14.8               | 4.2                    | 4.8              | 10.5                 | 4              | 2.0                        | 21.0            | 80              | 66                     |
| 2941       | 1932-37  | 12-4-37           | "               | "                  | "               | "              | "           | 30                               | 161                        | 0.35   | 21.80           | 20.2               | 51.0          | 0.6                        | 1,615          | 20.2           | 87.1                       | 2.4                   | 1,643               | 20.7           | 8.4             | 14.8               | 4.2                    | 4.8              | 10.5                 | 4              | 2.0                        | 21.0            | 80              | 67                     |
| 3157       | 1934-35  | 2-1-31            | "               | "                  | "               | "              | "           | 21                               | 164                        | 0.48   | 21.80           | 20.0               | 53.8          | 0.6                        | 1,758          | 20.6           | 91.7                       | 3.0                   | 1,744               | 20.8           | 8.4             | 14.8               | 3.2                    | 5.7              | 10.6                 | 4              | 2.0                        | 21.0            | 80              | 70                     |
| 3594       | 1936-36  | 7-5-36            | "               | "                  | "               | "              | "           | 14                               | 166                        | 0.74   | 21.80           | 20.0               | 53.0          | 4.5                        | 1,709          | 20.4           | 94.0                       | 3.1                   | 1,664               | 20.8           | 8.2             | 14.0               | 3.6                    | 6.4              | 9.6                  | 4              | 2.0                        | 21.0            | 80              | 69                     |
| 4050/1     | 1937-38  | 11-5-38           | "               | "                  | "               | "              | "           | 41                               | 162                        | 0.12   | 21.80           | 20.0               | 53.0          | 10.8                       | 1,403          | 20.4           | 84.0                       | 2.6                   | 1,406               | 20.8           | 7.8             | 13.2               | 4.8                    | 5.6              | 8.4                  | 4              | 2.0                        | 21.0            | 80              | 70                     |
| 4050/2     | 1937-38  | 10-5-38           | "               | "                  | "               | "              | "           | 13                               | 164                        | 0.82   | 21.80           | 21.1               | 55.7          | 5.9                        | 1,732          | 20.6           | 86.2                       | 2.6                   | 1,761               | 20.7           | 7.4             | 15.2               | 11.0                   | 5.8              | 8.4                  | 4              | 1.0                        | 21.0            | 81              | 60                     |
| 457        | 1923-28  | 18-3-20           | 33              | "                  | "               | "              | "           | 15                               | 144                        | 7.01   | 23.20           | 34.0               | 42.8          | 6.2                        | 1,456          | 32.7           | 69.3                       | 3.0                   | 1,905               | 33.6           | 0.4             | 11.8               | 5.0                    | 8.7              | 12.1                 | 5              | 3.5                        | 22.0            | 88              | 67                     |
| 716        | 1929-30  | 18-4-30           | "               | "                  | "               | "              | "           | 27                               | 148                        | 7.73   | 23.20           | 33.3               | 44.9          | 6.1                        | 1,486          | 32.0           | 74.0                       | 4.3                   | 1,905               | 34.4           | 0.4             | 11.8               | 5.0                    | 8.7              | 12.1                 | 5              | 3.5                        | 22.0            | 88              | 68                     |
| 1018       | 1930-31  | 10-4-31           | "               | "                  | "               | "              | "           | 51                               | 162                        | 7.42   | 23.20           | 33.8               | 38.3          | 0.4                        | 1,828          | 33.0           | 74.2                       | 2.9                   | 1,915               | 35.0           | 0.3             | 16.2               | 0.2                    | 6.0              | 10.6                 | 5              | 2.4                        | 22.0            | 80              | 69                     |
| 1313       | 1931-32  | 10-5-32           | "               | "                  | "               | "              | "           | 20                               | 149                        | 7.23   | 23.20           | 33.1               | 40.0          | 0.0                        | 1,824          | 33.6           | 75.1                       | 2.9                   | 1,953               | 34.2           | 0.1             | 16.0               | 8.3                    | 5.0              | 15.7                 | 5              | 2.4                        | 22.0            | 80              | 64                     |
| 2941       | 1932-37  | 12-4-37           | 40              | "                  | "               | "              | "           | 71                               | 134                        | 8.30   | 25.28           | 30.0               | 31.0          | 7.4                        | 1,200          | 38.2           | 63.8                       | 3.8                   | 1,437               | 40.0           | 5.1             | 17.0               | 14.2                   | 5.2              | 12.4                 | 6              | 1.8                        | 21.0            | 80              | 63                     |
| 3157       | 1934-35  | 2-1-31            | "               | "                  | "               | "              | "           | 43                               | 136                        | 8.05   | 25.28           | 30.4               | 35.0          | 6.6                        | 1,454          | 40.6           | 68.0                       | 3.2                   | 1,470               | 41.2           | 5.2             | 16.0               | 15.8                   | 4.8              | 12.7                 | 6              | 1.8                        | 21.0            | 80              | 64                     |
| 3594       | 1936-36  | 7-5-36            | "               | "                  | "               | "              | "           | 38                               | 138                        | 8.23   | 25.28           | 30.6               | 35.0          | 7.8                        | 1,270          | 41.0           | 62.7                       | 3.6                   | 1,464               | 40.7           | 5.0             | 17.3               | 13.8                   | 5.4              | 12.4                 | 6              | 1.8                        | 21.0            | 80              | 65                     |
| 4050/1     | 1937-38  | 12-5-38           | "               | "                  | "               | "              | "           | 15                               | 140                        | 8.33   | 25.28           | 30.3               | 30.9          | 7.2                        | 1,463          | 39.2           | 71.0                       | 2.6                   | 1,607               | 40.6           | 5.7             | 16.1               | 4.0                    | 5.4              | 9.7                  | 6              | 1.8                        | 21.0            | 80              | 66                     |
| 4050/2     | 1937-38  | 12-5-38           | "               | "                  | "               | "              | "           | 17                               | 142                        | 8.43   | 25.28           | 30.2               | 30.9          | 7.7                        | 1,463          | 40.2           | 70.0                       | 2.7                   | 1,605               | 40.8           | 5.1             | 15.3               | 7.0                    | 5.6              | 9.9                  | 6              | 1.8                        | 21.0            | 80              | 67                     |

\* Diameter of ring frame front roller—3 inch. Diameter of rings—1½ inch.



## 4.—WAGAD 8—(DHOLLERAS).

| Seasons.                   | Seasons.                   |
|----------------------------|----------------------------|
| 1925-26 (Sample No. 160).  | 1923-33 (Sample No. 1774). |
| 1926-27 (Sample No. 271).  | 1933-34 (Sample No. 2275). |
| 1927-28 (Sample No. 372).  | 1934-35 (Sample No. 2659). |
| 1928-29 (Sample No. 494).  | 1935-36 (Sample No. 3115). |
| 1929-30 (Sample No. 608).  | 1936-37 (Sample No. 3650). |
| 1930-31 (Sample No. 1008). | 1937-38 (Sample No. 4123). |
| 1931-32 (Sample No. 1300). |                            |

## I.—AGRICULTURAL DETAILS.

*Botanical species* :—*Gossypium herbaceum*.

*History* :—Wagad cotton is the best constituent of the commercial crop known as Dholleras, of which it forms about 75 per cent. The most characteristic feature of the Wagad variety is that the bolls do not open when ripe, and are consequently picked entire in one lot, the seed-cotton being extracted later when convenient. Wagad 8 was originally selected in 1917-18; it has been found to be pure since 1919-20, and has been grown on a field scale since 1921-22. (Reference—Memoir of the Department of Agriculture in India Botanical Series, Vol. XIV, No. 2, of 1926.)

*District of growth* :—North Gujarat-Viramgam Taluka of the Ahmedabad district, North and Western Kathiawar, and Cutch. The particular samples used in these tests have been grown on the Government Farm, Viramgam.

*Growing period* :—Sown in the beginning of July, and picked in March.

*Soil* :—*Besar*—a saltish alluvium derived from the granitic and gneissic rocks of Rajputana and Central India.

*Rainfall* :—Variable over the area, averaging from 13 to 30 inches annually; 34.17 inches in 1932-33; 43.34 inches in 1933-34; 21.80 inches in 1934-35; 13.23 inches in 1935-36; 10.84 inches in 1936-37 (dry year); 31.9 inches in 1937-38 (August, dry).

*Temperature* :—Maximum 110° F. Minimum 52° F. Lowest monthly mean 58.7° F. (January).

*Plant particulars (average values)* :—

- Bolls per plant: 8 (spacing: 24" × 9").
- Seeds per boll: 19.
- Weight of seed: 67 milligrammes.
- Weight of lint per seed: 52 milligrammes.
- Ginning percentage: 42; 36-39 in 1933-34; 43 in 1934-35; 40 in 1935-36; 34 in 1936-37; 43.7 in 1937-38.

*Yield of seed-cotton* :—

|                        |    |                    |                         |    |                    |
|------------------------|----|--------------------|-------------------------|----|--------------------|
| Viramgam farm) 1923-27 | .. | 665 lbs. per acre. | (Viramgam farm) 1933-34 | .. | 602 lbs. per acre. |
| " 1929-30              | .. | 556 lbs. " "       | " " 1934-35             | .. | 640 lbs. " "       |
| " 1930-31              | .. | 513 lbs. " "       | " " 1935-36             | .. | 458 lbs. " "       |
| " 1931-32              | .. | 842 lbs. " "       | " " 1936-37             | .. | 117 lbs. " "       |
| " 1932-33              | .. | 625 lbs. " "       | " " 1937-38             | .. | 920 lbs. " "       |

*Area under cultivation (average values)* :—

|    |                                                |         |    |                                  |
|----|------------------------------------------------|---------|----|----------------------------------|
| 27 | 60 acres.                                      | 1930-31 | .. | 1,500 acres.                     |
| 28 | 250 acres, almost completely ruined by floods. | 1933-34 | .. | 800 acres.                       |
|    |                                                | 1934-35 | .. | 746 acres.                       |
| 29 | 20 acres.                                      | 1935-36 | .. | 1,060 acres.                     |
| 30 | 105 acres.                                     | 1936-37 | .. | 780 acres. (Ahmedabad District.) |

Distribution of the seed of this cotton has been discontinued by the Department, but the seed already distributed the type is spreading naturally though not in a pure

## II.—GRADER'S REPORT.

|            | 1928-29.   | 1929-30.   | 1930-31.   | 1931-32.            | 1932-33.    | 1933-34.    | 1934-35.    | 1935-36.                               | 1936-37.    | 1937-38.            |
|------------|------------|------------|------------|---------------------|-------------|-------------|-------------|----------------------------------------|-------------|---------------------|
| Seed under | Dholleras. | Dholleras. | Broach.    | Broach.             | Broach.     | Broach.     | Broach.     | Broach.                                | Broach      | Broach.             |
| .. ..      | Fine.      | Fine.      | Fine.      | Superfine Dhollera. | Fine.       | Fully good. | Fully good. | Superfine.                             | Superfine.  | Fine to superfine.  |
| .. ..      | White.     | White.     | White.     | White.              | White.      | White.      | White.      | White.                                 | White.      | White.              |
| .. ..      | 3/4 inch.  | 7/8 inch.  | 7/8 inch.  | 15/16 inch.         | 13/16 inch. | 3/4 inch.   | 9/10 inch.  | 5/8 inch.                              | 11/16 inch. | 3/4 inch.           |
| .. ..      | Good.      | Fair.      | Fair.      | Fair.               | Fair.       | Fair.       | Fair.       | Fair.                                  | Moderate.   | Moderate.           |
| .. ..      | Good.      | Fair.      | Fair.      | Fair.               | Fair.       | Fair.       | Fair.       | Regular.                               | Regular.    | Slightly irregular. |
| above or   |            |            |            |                     |             |             |             |                                        |             |                     |
| .. ..      | Rs. 5 on.  | Par.       | Rs. 20 on. | Rs. 15 on.          | Par.        | Par.        | Rs. 40 off. | Rs. 10 off.                            | Par Broach  | Rs. 7 on.           |
| .. ..      | Rs. 354.   | Rs. 250.   | Rs. 205.   | Rs. 180.            | Rs. 215.    | Rs. 200.    | Rs. 215.    | Rs. 107.                               | Rs. 227.    | Rs. 151.            |
| .. ..      | 12-4-29.   | 16-4-30.   | 20-3-31.   | 9-1-32.             | 30-5-33.    | 28-5-34.    | 6-3-35.     | 8-4-36.                                | 19-6-37.    | 1-8-38.             |
| .. ..      | ..         | ..         | ..         | Soil.               | ..          | ..          | ..          | Sample unpressed; cotton badly ginned. | ..          | ..                  |



## III.—FIBRE PARTICULARS.

| 1. Fibre-Length Distribution (Ball Sorter) :—          |      | Percentage. |          |          |          |          |          |          |          |          |          |
|--------------------------------------------------------|------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Mean group-length in eighths of an inch.               |      | 1925-29.    | 1930-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |
| 2                                                      | 1.0  | 1.0         | 2.3      | 0.4      | 0.9      | 0.9      | 1.2      | 1.0      | 1.5      | 0.4      | 0.3      |
| 3                                                      | 5.6  | 5.6         | 5.3      | 6.1      | 3.2      | 1.8      | 2.6      | 2.4      | 2.7      | 2.2      | 1.5      |
| 4                                                      | 13.6 | 13.6        | 10.3     | 17.7     | 13.1     | 1.0      | 5.6      | 0.2      | 6.7      | 5.6      | 3.9      |
| 5                                                      | 28.0 | 28.0        | 25.7     | 37.0     | 27.0     | 11.3     | 15.0     | 15.0     | 15.0     | 12.0     | 10.3     |
| 6                                                      | 32.3 | 32.3        | 27.4     | 23.4     | 23.4     | 25.2     | 23.9     | 30.0     | 31.5     | 27.2     | 20.3     |
| 7                                                      | 13.4 | 13.4        | 8.1      | 8.6      | 13.5     | 30.4     | 20.7     | 27.0     | 29.0     | 30.3     | 20.3     |
| 8                                                      | 2.2  | 2.2         | 1.9      | 2.4      | 1.6      | 17.7     | 13.6     | 12.0     | 9.9      | 10.4     | 16.4     |
| 9                                                      | 0.3  | 0.3         | ..       | ..       | ..       | 6.4      | 3.3      | 3.4      | 3.7      | 1.3      | 1.3      |
| 10                                                     | ..   | ..          | ..       | ..       | ..       | 1.9      | 0.3      | 0.3      | 0.2      | 0.5      | 0.4      |
| 2. Fibre-Length (inch) :—                              |      |             |          |          |          |          |          |          |          |          |          |
| (a) By Balls Sorter                                    | ..   | 0.70        | 0.79     | 0.77     | 0.79     | 0.83     | 0.79     | 0.78     | 0.77     | 0.81     | 0.82     |
| (b) By Ball Sorter                                     | ..   | 0.80        | 0.75     | 0.79     | 0.52     | 0.84     | 0.80     | 0.70     | 0.78     | 0.81     | 0.82     |
| 3. Fibre-Length Irregularity (%)                       | ..   | ..          | 10.1     | 11.3     | 17.0     | 11.1     | 15.0     | 14.4     | 15.0     | 15.2     | 12.8     |
| 4. Fibre-Weight per inch (millilith of an ounce)       | ..   | 0.233       | 0.103    | 0.257    | 0.225    | 0.210    | 0.199    | 0.232    | 0.216    | 0.221    | 0.211    |
| 5. Fibre-Strength (oz.) :—                             |      |             |          |          |          |          |          |          |          |          |          |
| (a) By Balls Tester                                    | ..   | 0.150       | 0.136    | 0.107    | 0.171    | 0.180    | 0.140    | 0.151    | 0.141    | 0.154    | 0.142    |
| (b) By O'Neill Tester                                  | ..   | 0.114       | 0.130    | 0.178    | 0.172    | 0.161    | 0.147    | 0.163    | 0.139    | 0.162    | 0.145    |
| 6. Fibre-Strength per unit fibre-weight per inch       | ..   | 0.62        | 0.68     | 0.67     | 0.76     | 0.72     | 0.72     | 0.69     | 0.65     | 0.71     | 0.69     |
| 7. Fibre-Rigidity (millilith of an ounce, square inch) | ..   | 0.160       | 0.139    | 0.288    | 0.231    | ..       | ..       | ..       | ..       | ..       | ..       |
| 8. Ribbon-Width (thousandth of an inch)                | ..   | 0.73        | 0.77     | 0.77     | 0.71     | 0.82     | ..       | ..       | ..       | ..       | ..       |
| 9. Convolution per inch                                | ..   | 53          | 56       | 59       | 56       | 70       | ..       | ..       | ..       | ..       | ..       |
| 10. Maturity Test Results (%) :—                       |      |             |          |          |          |          |          |          |          |          |          |
| (a) Mature                                             | ..   | ..          | ..       | ..       | ..       | ..       | ..       | 43       | 47       | 53       | 57       |
| (b) Half-mature                                        | ..   | ..          | ..       | ..       | ..       | ..       | ..       | 24       | 27       | 28       | 28       |
| (c) Immature                                           | ..   | ..          | ..       | ..       | ..       | ..       | ..       | 24       | 26       | 23       | 23       |

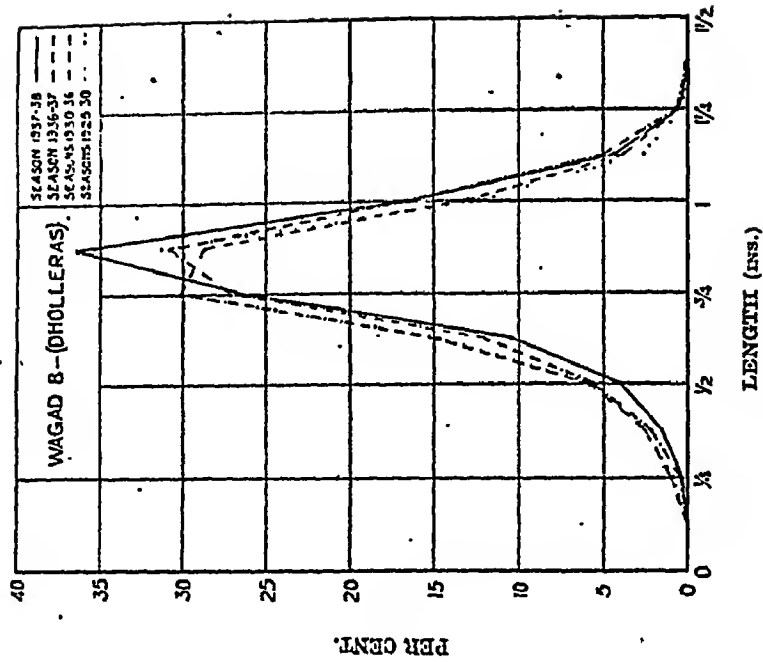


Fig. 4.—Sorter Diagrams for Waged 8—(Dholleras).

## IV. SPINNING TESTS.

*Treatment :—*

*Blow-room.*—Upto 1934-35 (inclusive):—Lattice feeder, Crighton (twice), Hopper, Scutcher (3 times). The 1925-26 and 1926-27 samples were passed directly through the Crighton (twice). The 1927-28 and 1928-29 samples were passed once through the Crighton.

1935-36 onwards:—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

*Card-room.*—Upto 1934-35 (inclusive):—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards:—As above but spun from single hank roving on Ring Frame No. 3 which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

*Spinning Master's Report :—*

| Season        | 1928-29.      | 1929-30.                                      | 1930-31.                           | 1931-32.              | 1932-33.           | 1933-34.                     | 1934-35.              | 1935-36.        | 1936-37.                          | 1937-38.                 |
|---------------|---------------|-----------------------------------------------|------------------------------------|-----------------------|--------------------|------------------------------|-----------------------|-----------------|-----------------------------------|--------------------------|
| Color         | White.        | White.                                        | White; bright.                     | White.                | White.             | White; brightish.            | White; brightish.     | White; bright.  | White to creamy-white.            | White; bright.           |
| Leafiness     | Fairly clean. | Fairly leafy.                                 | An occasional stain; fairly leafy. | Fairly clean.         | Fairly clean.      | Leafy (fine).                | Fairly leafy.         | Somewhat leafy. | A little leafy; a trifle stained. | Leafy; occasional stain. |
| Neppiness     | ..            | Good.                                         | ..                                 | ..                    | Rough.             | Slightly rough.              | Good.                 | Roughish.       | Fairly good.                      | Roughish.                |
| Grinning      | Well-ginned.  | Well-ginned.                                  | Well-ginned.                       | Well-ginned.          | Well-ginned.       | Well-ginned.                 | Well-ginned (charka). | Well-ginned.    | Well-ginned.                      | Well-ginned.             |
| Seeds         | ..            | A little ent seed present.                    | ..                                 | ..                    | ..                 | Contains a few ginned seeds. | ..                    | ..              | ..                                | ..                       |
| Cleanliness   | ..            | ..                                            | Clean.                             | A little leafy.       | Clean.             | Almost clean.                | Clean.                | Clean.          | Clean and good.                   | Clean.                   |
| Evenness      | ..            | ..                                            | Clean and even.                    | Even and free of nep. | Even and nep-free. | Good.                        | Good.                 | Good.           | Good and nep-free.                | Good; quite free of nep. |
| Staple length | ..            | Staple is fine, regular and of fair strength. | 12.8 grams.                        | ..                    | 10.0 grams.        | 17.0 grams.                  | 14.1 grams.           | 12.5 grams.     | 10.8 grams.                       | 15.0 grams.              |

*Spinning Test Details and Results :—*See Table 4, page 28.

## V.—REMARKS.

*(i) Fibre.*—This cotton shows considerable seasonal variation in its fibre-properties. Mean fibre-length is unusually high in 1932-33, and low in 1929-30. The fibre-length variability is rather high in 1931-32 and low in the previous two seasons. The fibre-weight per inch is low in 1929-30 and 1933-34 and the fibre-strength in 1929-30, 1934 and again in 1935-36 and 1937-38. The fibre-rigidity is very variable, being less than half in 1929-30 than in 1930-31. The 1937-38 cotton much resembles its immediate predecessor in fibre-properties, except that its staple is somewhat weaker but regular in length.

*(ii) Waste.*—This cotton usually gives about 7-8 per cent. blow-room and 9 per cent. room loss, though the 1930-31 and 1936-37 samples were dirtier than the others.

*(iii) Breakages.*—Yarn breakages in the ring frame are generally few in 10's counts, these may be fairly numerous in 12's and 14's counts. The 1934-35, 1935-36 and 1937-38 cottons gave, on the whole, quite fewer breakages in the ring frame, but the 1936-37 registered fairly numerous breakages both in 12's and 16's counts.

*(iv) Yarns.*—Yarns spun from this cotton are usually very even to even in 10's, and to fairly even in 14's A. Its yarns are generally practically free of neps though in 1928 and 1929-30, they are rather neppy. The yarn-strength results are better than usual in 1931-32 and 1933-34, and poor in 1935-36.

*(v) Conclusion.*—The following are the highest standard warp counts for which this cotton is adjudged suitable in the different seasons :—

|         |    |       |         |    |       |         |    |       |
|---------|----|-------|---------|----|-------|---------|----|-------|
| 1925-26 | .. | 12's. | 1930-31 | .. | 12's. | 1935-36 | .. | 12's. |
| 1926-27 | .. | 14's. | 1931-32 | .. | 16's. | 1936-37 | .. | 13's. |
| 1927-28 | .. | 15's. | 1932-33 | .. | 13's. | 1937-38 | .. | 13's. |
| 1928-29 | .. | 15's. | 1933-34 | .. | 16's. |         |    |       |
| 1929-30 | .. | 12's. | 1934-35 | .. | 14's. |         |    |       |

TABLE 4.—SPINNING TEST RESULTS FOR WAGAD 8.

## SPINDLE SPEED (1937-38.)

## TRAVELLER COUNTS.

## HANK (1937-38)

|         |    |              |    |    |     |     |    |              |
|---------|----|--------------|----|----|-----|-----|----|--------------|
| Card    | .. | 0.16         | 12 | .. | 3   | 12s | .. | 8,100 r.p.m. |
| Slubber | .. | 0.62         | 14 | .. | 1   | 14s | .. | 8,100 r.p.m. |
| Inter   | .. | 1.22         | 16 | .. | 1/0 | 16s | .. | 8,000 r.p.m. |
| Rover   | .. | 2.40 ; 2.78. |    |    |     |     |    |              |

| Sample No. | Season. | Date of Spinning. | Counts Nominal. | WASTE PERCENTAGES. |                 |                |             | RING FRAME PARTICULARS.*                  |                            |        |                 | YARN TEST RESULTS. |                 |                 |                         |                |                             |                       |                |         |                 | TEMPERATURE (%). | RELATIVE HUMIDITY (%). |                 |                |                     |                 |                |                        |    |
|------------|---------|-------------------|-----------------|--------------------|-----------------|----------------|-------------|-------------------------------------------|----------------------------|--------|-----------------|--------------------|-----------------|-----------------|-------------------------|----------------|-----------------------------|-----------------------|----------------|---------|-----------------|------------------|------------------------|-----------------|----------------|---------------------|-----------------|----------------|------------------------|----|
|            |         |                   |                 | Blow Room Loss.    | Card Room Loss. | Spinning Loss. | Total Loss. | Yarn Breakages per 100 spindles per hour. | Front Roller Speed, R.P.M. | Draft. | Turns per Inch. | AREA.              |                 |                 | BALISTICAL.             |                |                             | SINGLE THREAD.        |                |         |                 |                  |                        |                 |                |                     |                 |                |                        |    |
|            |         |                   |                 |                    |                 |                |             |                                           |                            |        |                 | Counts Actual.     | Strength (lbs.) | Strength (lbs.) | Count-Strength Product. | Counts Actual. | Work of Rupture (fuch-lbs.) | Work Irregularity (%) | Count-product. | Counts. | Strength (ozs.) |                  |                        | Strength (lbs.) | Extension (%). | Extension (inches). | Evenness Class. | Neps per yard. | Turns per Inch Actual. |    |
|            |         |                   |                 |                    |                 |                |             |                                           |                            |        |                 |                    |                 |                 |                         |                |                             |                       |                |         |                 |                  |                        |                 |                |                     |                 |                |                        |    |
| 401        | 1928-29 | 8-1-20            | 10              | ..                 | 0.0             | 0.0            | 0.0         | 17                                        | 193                        | 4.00   | 12.63           | 10.5               | 135.0           | 4.6             | 4.6                     | 1.287          | 12.1                        | 255.8                 | 2.0            | 10.5    | 17.5            | 11.0             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 608        | 1929-30 | 2-1-20            | "               | ..                 | 0.0             | 0.0            | 0.0         | 20                                        | 200                        | 4.24   | 12.63           | 10.5               | 135.0           | 4.6             | 4.6                     | 1.287          | 12.1                        | 255.8                 | 2.0            | 10.5    | 17.5            | 11.0             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 1008       | 1930-31 | 18-3-31           | "               | ..                 | 0.0             | 0.0            | 0.0         | 20                                        | 195                        | 3.76   | 12.63           | 10.5               | 135.0           | 4.6             | 4.6                     | 1.287          | 12.1                        | 255.8                 | 2.0            | 10.5    | 17.5            | 11.0             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 1306       | 1931-32 | 11-4-32           | "               | ..                 | 0.0             | 0.0            | 0.0         | 20                                        | 208                        | 4.96   | 12.63           | 10.5               | 135.0           | 4.6             | 4.6                     | 1.287          | 12.1                        | 255.8                 | 2.0            | 10.5    | 17.5            | 11.0             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 1774       | 1932-33 | 20-5-33           | "               | ..                 | 0.0             | 0.0            | 0.0         | 20                                        | 210                        | 5.10   | 12.63           | 10.5               | 135.0           | 4.6             | 4.6                     | 1.287          | 12.1                        | 255.8                 | 2.0            | 10.5    | 17.5            | 11.0             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 100        | 1933-34 | 5-8-30            | 12              | ..                 | 0.0             | 0.0            | 0.0         | 45                                        | 188                        | 5.88   | 13.02           | 11.0               | 135.0           | 4.6             | 4.6                     | 1.287          | 12.1                        | 255.8                 | 2.0            | 10.5    | 17.5            | 11.0             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 608        | 1933-34 | 24-3-30           | "               | ..                 | 0.0             | 0.0            | 0.0         | 44                                        | 200                        | 4.48   | 13.02           | 11.0               | 135.0           | 4.6             | 4.6                     | 1.287          | 12.1                        | 255.8                 | 2.0            | 10.5    | 17.5            | 11.0             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 1775       | 1933-34 | 14-5-34           | "               | ..                 | 0.0             | 0.0            | 0.0         | 44                                        | 200                        | 4.48   | 13.02           | 11.0               | 135.0           | 4.6             | 4.6                     | 1.287          | 12.1                        | 255.8                 | 2.0            | 10.5    | 17.5            | 11.0             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 2275       | 1934-35 | 16-2-35           | "               | ..                 | 0.0             | 0.0            | 0.0         | 44                                        | 200                        | 4.48   | 13.02           | 11.0               | 135.0           | 4.6             | 4.6                     | 1.287          | 12.1                        | 255.8                 | 2.0            | 10.5    | 17.5            | 11.0             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 3050       | 1934-35 | 16-2-35           | "               | ..                 | 0.0             | 0.0            | 0.0         | 51                                        | 203                        | 5.35   | 13.02           | 11.0               | 135.0           | 4.6             | 4.6                     | 1.287          | 12.1                        | 255.8                 | 2.0            | 10.5    | 17.5            | 11.0             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 3650       | 1935-36 | 7-6-37            | "               | ..                 | 0.0             | 0.0            | 0.0         | 10                                        | 217                        | 5.21   | 13.02           | 11.0               | 135.0           | 4.6             | 4.6                     | 1.287          | 12.1                        | 255.8                 | 2.0            | 10.5    | 17.5            | 11.0             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 4123/1     | 1937-38 | 2-7-38            | "               | ..                 | 0.0             | 0.0            | 0.0         | 10                                        | 216                        | 5.32   | 13.02           | 11.0               | 135.0           | 4.6             | 4.6                     | 1.287          | 12.1                        | 255.8                 | 2.0            | 10.5    | 17.5            | 11.0             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 4123/2     | 1937-38 | 4-7-38            | "               | ..                 | 0.0             | 0.0            | 0.0         | 10                                        | 216                        | 5.32   | 13.02           | 11.0               | 135.0           | 4.6             | 4.6                     | 1.287          | 12.1                        | 255.8                 | 2.0            | 10.5    | 17.5            | 11.0             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 401        | 1928-29 | 8-1-20            | 14 A            | ..                 | 0.0             | 0.0            | 0.0         | 2                                         | 170                        | 0.24   | 15.08           | 14.3               | 88.0            | 4.8             | 4.8                     | 1.327          | 14.2                        | 157.4                 | 1.0            | 14.2    | 11.8            | 11.4             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 608        | 1929-30 | 2-1-20            | "               | ..                 | 0.0             | 0.0            | 0.0         | 2                                         | 104                        | 0.74   | 15.08           | 14.3               | 88.0            | 4.8             | 4.8                     | 1.327          | 14.2                        | 157.4                 | 1.0            | 14.2    | 11.8            | 11.4             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 1008       | 1930-31 | 18-3-31           | "               | ..                 | 0.0             | 0.0            | 0.0         | 23                                        | 192                        | 5.21   | 15.08           | 14.3               | 88.0            | 4.8             | 4.8                     | 1.327          | 14.2                        | 157.4                 | 1.0            | 14.2    | 11.8            | 11.4             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 1306       | 1931-32 | 11-4-32           | "               | ..                 | 0.0             | 0.0            | 0.0         | 10                                        | 105                        | 4.62   | 15.08           | 14.3               | 88.0            | 4.8             | 4.8                     | 1.327          | 14.2                        | 157.4                 | 1.0            | 14.2    | 11.8            | 11.4             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 1744       | 1932-33 | 22-5-33           | "               | ..                 | 0.0             | 0.0            | 0.0         | 30                                        | 108                        | 4.68   | 15.08           | 14.3               | 88.0            | 4.8             | 4.8                     | 1.327          | 14.2                        | 157.4                 | 1.0            | 14.2    | 11.8            | 11.4             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 2275       | 1933-34 | 14-5-34           | "               | ..                 | 0.0             | 0.0            | 0.0         | 10                                        | 105                        | 4.62   | 15.08           | 14.3               | 88.0            | 4.8             | 4.8                     | 1.327          | 14.2                        | 157.4                 | 1.0            | 14.2    | 11.8            | 11.4             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 3050       | 1934-35 | 16-2-35           | "               | ..                 | 0.0             | 0.0            | 0.0         | 18                                        | 186                        | 5.26   | 14.08           | 14.0               | 88.0            | 4.8             | 4.8                     | 1.327          | 14.0                        | 160.8                 | 1.0            | 14.0    | 11.8            | 11.4             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 3650       | 1935-36 | 7-6-37            | "               | ..                 | 0.0             | 0.0            | 0.0         | 0                                         | 166                        | 5.20   | 14.08           | 14.0               | 88.0            | 4.8             | 4.8                     | 1.327          | 14.0                        | 160.8                 | 1.0            | 14.0    | 11.8            | 11.4             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 4123/1     | 1937-38 | 2-7-38            | "               | ..                 | 0.0             | 0.0            | 0.0         | 0                                         | 200                        | 5.32   | 14.08           | 14.0               | 88.0            | 4.8             | 4.8                     | 1.327          | 14.0                        | 160.8                 | 1.0            | 14.0    | 11.8            | 11.4             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 4123/2     | 1937-38 | 4-7-38            | "               | ..                 | 0.0             | 0.0            | 0.0         | 0                                         | 200                        | 5.32   | 14.08           | 14.0               | 88.0            | 4.8             | 4.8                     | 1.327          | 14.0                        | 160.8                 | 1.0            | 14.0    | 11.8            | 11.4             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 1008       | 1928-29 | 8-1-20            | 14 B            | ..                 | 0.0             | 0.0            | 0.0         | 10                                        | 180                        | 0.87   | 15.07           | 14.0               | 80.0            | 7.0             | 7.0                     | 1.250          | 14.3                        | 161.8                 | 1.0            | 14.3    | 12.2            | 12.2             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 373        | 1929-30 | 17-4-30           | "               | ..                 | 0.0             | 0.0            | 0.0         | 20                                        | 180                        | 0.87   | 15.07           | 14.0               | 80.0            | 7.0             | 7.0                     | 1.250          | 14.3                        | 161.8                 | 1.0            | 14.3    | 12.2            | 12.2             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 1306       | 1931-32 | 11-4-32           | "               | ..                 | 0.0             | 0.0            | 0.0         | 10                                        | 180                        | 0.87   | 15.07           | 14.0               | 80.0            | 7.0             | 7.0                     | 1.250          | 14.3                        | 161.8                 | 1.0            | 14.3    | 12.2            | 12.2             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 2376       | 1933-34 | 14-5-34           | "               | ..                 | 0.0             | 0.0            | 0.0         | 10                                        | 180                        | 0.87   | 15.07           | 14.0               | 80.0            | 7.0             | 7.0                     | 1.250          | 14.3                        | 161.8                 | 1.0            | 14.3    | 12.2            | 12.2             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 3390       | 1934-35 | 16-2-35           | "               | ..                 | 0.0             | 0.0            | 0.0         | 10                                        | 186                        | 0.91   | 15.07           | 14.0               | 80.0            | 7.0             | 7.0                     | 1.250          | 14.3                        | 161.8                 | 1.0            | 14.3    | 12.2            | 12.2             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 3650       | 1935-36 | 7-6-37            | "               | ..                 | 0.0             | 0.0            | 0.0         | 21                                        | 181                        | 0.91   | 15.07           | 14.0               | 80.0            | 7.0             | 7.0                     | 1.250          | 14.3                        | 161.8                 | 1.0            | 14.3    | 12.2            | 12.2             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 4123/1     | 1937-38 | 2-7-38            | "               | ..                 | 0.0             | 0.0            | 0.0         | 0                                         | 186                        | 0.87   | 15.07           | 14.0               | 80.0            | 7.0             | 7.0                     | 1.250          | 14.3                        | 161.8                 | 1.0            | 14.3    | 12.2            | 12.2             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |
| 4123/2     | 1937-38 | 4-7-38            | "               | ..                 | 0.0             | 0.0            | 0.0         | 0                                         | 186                        | 0.87   | 15.07           | 14.0               | 80.0            | 7.0             | 7.0                     | 1.250          | 14.3                        | 161.8                 | 1.0            | 14.3    | 12.2            | 12.2             | 0.0                    | 0.0             | 4.1            | 0.0                 | 1.0             | 80             | 70                     | 70 |

\* Diameter of ring frame front roller—1/8 inch. Diameter of rings—1/8 inch.

## 5.—SIND SUDHAR—(289F-1).

Seasons

1930-31 (Sample No. 939).  
 1931-32 (Sample No. 1270).  
 1932-33 (Sample No. 1609).  
 1933-34 (Sample No. 2210).  
 1934-35 (Sample No. 2670).  
 1935-36 (Sample No. 3134).  
 1936-37 (Sample No. 3557).  
 1937-38 (Sample No. 3990).

## I.—AGRICULTURAL DETAILS.

*Botanical species* :—*Gossypium hirsutum*, Linn.

*History* :—A selection for high yield and longer staple from Punjab 289F cotton.

*District of growth* :—Irrigated area commanded by Barrage canals on left bank of the Indus river in middle and east Sind. The particular samples used in these tests have been grown at the Agricultural Research Station, Sakrand, in Nawabshah district (middle Sind).

*Growing period* :—Sowings commence from middle of March and continue upto the end of May. The crop is picked from the middle of October upto the first week of January.

*Soil* :—Alluvial loam.

*Rainfall* :—Variable. The average rainfall is about 5 inches ; 0.62" only in 1936 at Sakrand ; 4.1" in 1937.

*Temperature* :—Variable. In middle Sind, the mean maximum temperature remains above 100° F. from March to October. It attains a mean level of above 110° F. in the months of May and June, the maximum temperature reaching about 119° F. on individual days. After October, the temperature begins to fall rapidly and by the end of December it drops and in certain seasons frosts may occur, although pickings may continue upto the middle of January when frosts are very common.

*Plant particulars (Average values)* :—

- (a) Bolls per plant : 29 (Spacing 36" × 12").  
 (b) Seeds per boll : 28.  
 (c) Weight of seed : 92 milligrammes.  
 (d) Weight of lint per seed : 38 milligrammes.  
 (e) Ginning percentage : 29.

*Yield of seed cotton per acre* :—

| Year.           | Agricultural Research Station, Sakrand. | Average of all Govt. Farms in Sind on left bank of river Indus. |
|-----------------|-----------------------------------------|-----------------------------------------------------------------|
| 1931-32 .. .. . | 1,099 lbs.                              | ..                                                              |
| 1932-33 .. .. . | 1,568 "                                 | 608 lbs.                                                        |
| 1933-34 .. .. . | 1,860 "                                 | 1,540 "                                                         |
| 1934-35 .. .. . | 1,410 "                                 | 1,047 "                                                         |
| 1935-36 .. .. . | 1,110 "                                 | 1,043 "                                                         |
| 1936-37 .. .. . | 1,131 "                                 | 984 "                                                           |
| 1937-38 .. .. . | 706 "                                   | 700 "                                                           |

*Area under cultivation* :—

|                 | Departmental seed. |
|-----------------|--------------------|
| 1932-33 .. .. . | 35 acres.          |
| 1933-34 .. .. . | 1,830 "            |
| 1934-35 .. .. . | 2,550 "            |
| 1935-36 .. .. . | 20,445 "           |
| 1936-37 .. .. . | 82,630 "           |
| 1937-38 .. .. . | 46,930 "           |

## II.—GRADER'S REPORT.

|               | 1930-31.    | 1931-32.   | 1932-33.   | 1933-34.   | 1934-35.   | 1935-36.      | 1936-37.       | 1937-38.    |
|---------------|-------------|------------|------------|------------|------------|---------------|----------------|-------------|
| Quality under | Broach.     | Broach.    | Broach.    | Broach.    | Broach.    | Broach.       | Broach A/M     | Broach.     |
| .. .. .       | Fine.       | Fine.      | Fine.      | Fine.      | Fine.      | Superfine.    | Superfine.     | Fine.       |
| .. .. .       | Creamy.     | White.     | White.     | White.     | White.     | White.        | White.         | Dull White. |
| .. .. .       | 1½ inch.    | 1½ inch.   | 1"–1½"     | 1½ inch.   | 1 inch.    | Full ½ inch.  | Full 1 inch.   | 15/10 inch. |
| .. .. .       | Good.       | Good.      | Fair.      | Good.      | Fair.      | Very good.    | Very good.     | Good.       |
| .. .. .       | Good.       | Fair.      | Fair.      | Fair.      | Poor.      | Regular.      | Regular.       | Regular but |
| .. .. .       | Rs. 190 on. | Rs. 85 on. | Rs. 60 on. | Rs. 90 on. | Rs. 80 on. | Rs. 65 on.    | Rs. 90 on.     | Rs. 55 on.  |
| .. .. .       | Rs. 175.    | Rs. 230.   | Rs. 203.   | Rs. 198.   | Rs. 215.   | Rs. 197.      | Rs. 238.       | Rs. 159.    |
| .. .. .       | 19-12-30.   | 24-2-32.   | 12-1-33.   | 6-4-31.    | 6-3-35.    | 8-4-30.       | 21-4-37.       | 4-5-38.     |
| .. .. .       | ..          | ..         | ..         | ..         | ..         | Silky, nappy. | Staple strong. | ..          |

### III.—FIBRE PARTICULARS.

#### 1. Fibre-Length Distribution (Ball's Sorter) :—

| Mean group-length in eighths of an inch. | Percentage. |          |          |          |          |          |
|------------------------------------------|-------------|----------|----------|----------|----------|----------|
|                                          | 1930-31.    | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. |
| 2                                        | 0           | 1.1      | 0        | 0.3      | 1.3      | 1.2      |
| 3                                        | 1.0         | 1.6      | 2.5      | 1.4      | 2.2      | 2.9      |
| 4                                        | 3.8         | 3.0      | 4.1      | 1.8      | 2.8      | 4.2      |
| 5                                        | 5.4         | 7.1      | 6.5      | 3.1      | 4.0      | 6.1      |
| 6                                        | 8.8         | 12.5     | 12.3     | 6.3      | 7.6      | 9.9      |
| 7                                        | 14.2        | 24.1     | 24.0     | 14.0     | 16.7     | 17.0     |
| 8                                        | 29.3        | 29.0     | 28.7     | 23.6     | 27.4     | 28.9     |
| 9                                        | 25.9        | 15.6     | 16.8     | 28.7     | 26.6     | 20.5     |
| 10                                       | 9.4         | 4.0      | 4.5      | 10.4     | 9.5      | 9.2      |
| 11                                       | 1.0         | 1.1      | ..       | 4.4      | 1.0      | 2.1      |

#### 2. Fibre-Length (inch) :—

|                                                          |       |       |       |       |       |       |       |       |
|----------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| (a) By Ball's Sorter .. .. .                             | 0.97  | 0.90  | 0.91  | 1.03  | 0.97  | 0.94  | 0.94  | 0.98  |
| (b) By Haer Sorter .. .. .                               | 0.90  | 0.94  | 0.90  | 1.01  | 0.97  | 0.93  | 0.96  | 0.94  |
| 3. Fibre-Length Irregularity (%) .. .. .                 | 19.1  | 19.4  | 18.7  | 16.2  | 17.7  | 22.6  | 21.1  | 16.4  |
| 4. Fibre-Weight per inch (millionth of an ounce) .. .. . | 0.146 | 0.120 | 0.120 | 0.131 | 0.127 | 0.147 | 0.138 | 0.129 |
| 5. Fibre-Strength (oz.) :—                               |       |       |       |       |       |       |       |       |
| (a) By Ball's Tester .. .. .                             | ..    | ..    | ..    | ..    | 0.144 | 0.153 | 0.125 | 0.137 |
| (b) By O'Neill Tester .. .. .                            | ..    | ..    | ..    | ..    | 0.159 | 0.143 | 0.133 | 0.141 |
| 6. Fibre-Strength per unit fibre-weight per inch .. .. . | ..    | ..    | ..    | ..    | 1.19  | 1.01  | 0.93  | 1.08  |
| 7. Maturity test results (%) :—                          |       |       |       |       |       |       |       |       |
| (a) Matured .. .. .                                      | ..    | ..    | ..    | ..    | 59    | 65    | 69    | 73    |
| (b) Half-matured .. .. .                                 | ..    | ..    | ..    | ..    | 30    | 25    | 21    | 15    |
| (c) Immatured .. .. .                                    | ..    | ..    | ..    | ..    | 14    | 10    | 10    | 12    |

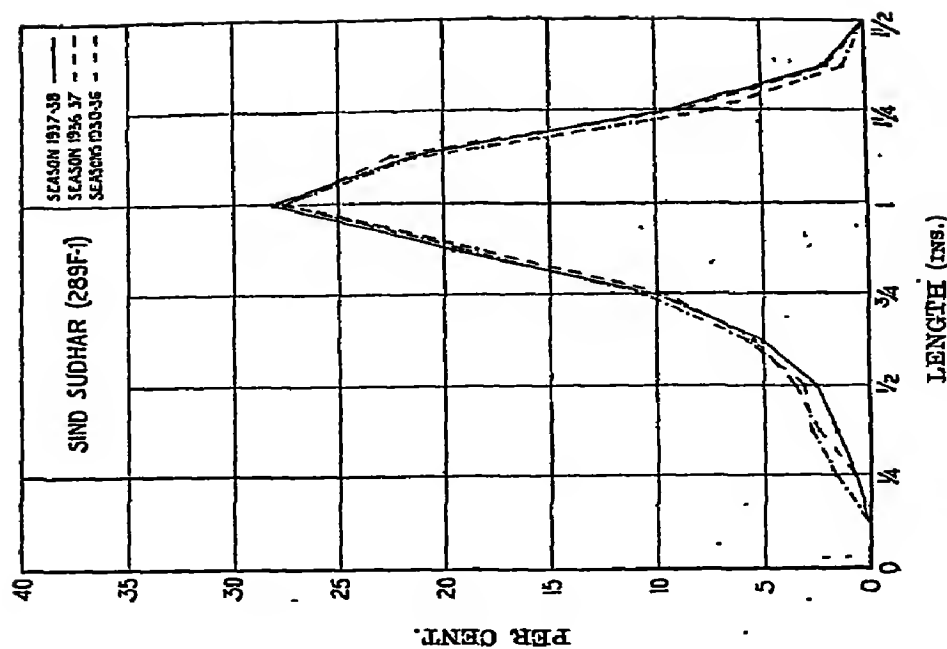


Fig. 5.—Sorter diagrams for Sind Sudhar (289F-1).

## IV.—SPINNING TESTS.

reatment :—

i) *Blow-room*.—Upto 1934-35 :—Lattice Feeder, Crighton (twice), Hopper, Scutcher (3 times).

1935-36 onwards :—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

ii) *Card-room*.—Upto 1934-35 :—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards :—As above but spun from single hank roving on Ring Frame No. 3 which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

Spinning Master's Report :—

| Season       | 1930-31.                                                      | 1931-32.                        | 1932-33.               | 1933-34.                 | 1934-35.             | 1935-36.                          | 1936-37.                 | 1937-38.                                     |
|--------------|---------------------------------------------------------------|---------------------------------|------------------------|--------------------------|----------------------|-----------------------------------|--------------------------|----------------------------------------------|
| .. ..        | Dullish creamy-white.                                         | White to creamy-white.          | White to creamy-white. | White to creamy-white.   | Creamy-white.        | White to creamy-white; brightish. | Creamy-white to white.   | White to creamy-white.                       |
| .. ..        | Somewhat leafy                                                | Fairly clean ..                 | Fairly clean ..        | Fairly clean ..          | Much stained; clean. | Fairly clean ..                   | Fairly clean ..          | Fairly clean.                                |
| .. ..        | ..                                                            | Good soft ..                    | Good ..                | Good bodied ..           | Softish ..           | Good silky ..                     | Good soft ..             | Soft.                                        |
| and neppi-   | Charaka-ginned; good deal knotted.                            | Fairly well-ginned.             | Well-ginned ..         | Well-ginned ..           | Knotted ..           | Well-ginned ..                    | Well-ginned ..           | Well-ginned contains some undeveloped seeds. |
| .. ..        | Fair number of undeveloped seeds.                             | Good deal of undeveloped seeds. | ..                     | 1.5% undeveloped seeds.  | Some cut seeds.      | ..                                | ..                       | ..                                           |
| .. ..        | Clean; soft and bodied feel.                                  | Clean ..                        | Clean ..               | Clean ..                 | Clean and soft.      | Clean ..                          | Fairly clean ..          | Clean.                                       |
| .. ..        | Good ..                                                       | Even and almost free of nep.    | Good ..                | Even but slightly neppy. | Noticeably neppy.    | Even and nepp-free.               | Good but a trifle neppy. | A little neppy.                              |
| of ten flat- | .. ..                                                         | 17.6 grams ..                   | 17.9 grams ..          | 18.5 grams ..            | 21.9 grams ..        | 14.7 grams ..                     | 16.7 grams ..            | 18.8 grams.                                  |
| .. ..        | Staple is long, fine, regular in length and of good strength. | ..                              | ..                     | ..                       | ..                   | ..                                | ..                       | ..                                           |

Spinning Test Details and Results :—See Table 5 on page 32.

## V.—REMARKS.

i) *Fibre*.—The mean fibre-length of this cotton shows fairly large seasonal variation; 12% higher in 1933-34 than in the two preceding seasons. The fibre-length irregularity is rather high in the two seasons, 1930-32 and still higher in the two seasons, 1935-37. Fibre-weight per inch remained fairly constant between 1931—35 but is rather high after in the two seasons, 1935-37. The 1937-38 sample has practically the same length, is much more regular than its predecessor; it is also slightly finer and somewhat longer.

ii) *Waste*.—The samples of this cotton have usually given about 7% blow-room loss and about 10% card-room loss. The 1931-32, 1934-35 and 1936-37 samples, however, are more wasteful than the others.

iii) *Breakages*.—Yarn breakages in the ring frame are generally few in 30's counts but fairly numerous in the higher counts into which this cotton has been spun.

iv) *Yarns*.—This cotton usually gives even or even to fairly even 30's. In 1936-37, the yarns are rather more uneven than the others. Its yarns are generally somewhat better, though in the seasons 1930-32 and 1934-35 they were quite neppy.

v) *Conclusions*.—This cotton has given variable performance, its yarn strength being much better in 1932-33, 1933-34 and in the present season, 1937-38, than in the other seasons. From its yarn strength results this cotton has been adjudged suitable for the following highest standard warp counts :—

|            |       |            |       |
|------------|-------|------------|-------|
| 1930-31 .. | 42's. | 1934-35 .. | 43's. |
| 1931-32 .. | 42's. | 1935-36 .. | 45's. |
| 1932-33 .. | 50's. | 1936-37 .. | 42's. |
| 1933-34 .. | 50's. | 1937-38 .. | 50's. |

Table 5.—SPINNING TEST RESULTS FOR SIND SUDHAR (289F-1).

| HANK (1937-38).      |         |                   |                  |                 |  |  |                 |  |  | TRAVELLER COUNTS.        |  |  |             |  |  |                        |                    |        |                 | SPINDLE SPEED (1937-38). |  |  |            |  |  |                |  |  |  |  |  |  |                   |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Card .. 0.16         |         |                   |                  |                 |  |  |                 |  |  | 20's .. 3/0              |  |  |             |  |  |                        |                    |        |                 | 20's .. 10,250 r.p.m.    |  |  |            |  |  |                |  |  |  |  |  |  |                   |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Slubber .. 0.74      |         |                   |                  |                 |  |  |                 |  |  | 30's .. 7/0              |  |  |             |  |  |                        |                    |        |                 | 30's .. 10,250 r.p.m.    |  |  |            |  |  |                |  |  |  |  |  |  |                   |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Inter .. 1.70        |         |                   |                  |                 |  |  |                 |  |  | 40's .. 12/0             |  |  |             |  |  |                        |                    |        |                 | 40's .. 10,200 r.p.m.    |  |  |            |  |  |                |  |  |  |  |  |  |                   |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Rover .. 3.55; 4.06. |         |                   |                  |                 |  |  |                 |  |  |                          |  |  |             |  |  |                        |                    |        |                 |                          |  |  |            |  |  |                |  |  |  |  |  |  |                   |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| WASTE PERCENTAGES.   |         |                   |                  |                 |  |  |                 |  |  | RING FRAME PARTICULARS.* |  |  |             |  |  |                        |                    |        |                 | YARN TEST RESULTS.       |  |  |            |  |  |                |  |  |  |  |  |  |                   |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Sample No.           | Season. | Date of Spinning. | Count's Nominal. | Blow Room Loss. |  |  | Card Room Loss. |  |  | Spinning Loss.           |  |  | Total Loss. |  |  | Yarn Breakages per 100 | Front Roller Speed | Draft. | Turns per Inch. | LEI.                     |  |  | DAILISTIC. |  |  | SINGLE THREAD. |  |  |  |  |  |  | TEMPERATURE (°F.) | RELATIVE HUMIDITY (%) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                      |         |                   |                  |                 |  |  |                 |  |  |                          |  |  |             |  |  |                        |                    |        |                 |                          |  |  |            |  |  |                |  |  |  |  |  |  |                   |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

\*Diameter of ring frame front roller—1". Diameter of rings—11".

## 6.—SIND N. R.—(W.N.27.)

## Seasons.

|                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| 1929-30 (Sample No. 785).  | 1932-33 (Sample No. 1610). | 1935-36 (Sample No. 3135). |
| 1930-31 (Sample No. 945).  | 1933-34 (Sample No. 2213). | 1936-37 (Sample No. 3558). |
| 1931-32 (Sample No. 1279). | 1934-35 (Sample No. 2672). | 1937-38 (Sample No. 4040). |

## I.—AGRICULTURAL DETAILS.

*Botanical Species* :—*Gossypium neglectum* Var-Rosea.

*History* :—A selection from ordinary *deshi* for high yield and high ginning output. It is narrow lobed variety having white flowers.

*District of growth* :—Middle and North Sind and Right Bank of the Indus river. The particular samples used in these tests have been grown at the Agricultural Research Station, Sakrand in Nawabshah District (Middle Sind).

*Growing period* :—Sowings commence from April and continue upto mid-June. The crop is picked from middle of September to December end.

*Soil* :—Alluvial loam.

*Rainfall* :—Variable. The average rainfall is about 5 inches ; 0.62" only in 1936 at Sakrand ; 4.1" in 1937.

*Temperature* :—Variable. In Middle Sind, the mean maximum temperature remains above 100° F. from March to October. It attains a mean level of above 110° F. in the months of May and June, the maximum temperature reaching about 119° F. on individual days. After October, the temperature begins to fall rapidly and by the end of December it drops and in certain seasons frosts may occur, although pickings may continue upto the middle of January when frosts are very common.

*Plant Particulars (Average values)* :—

- Bolls per plant : 39 (spacing 36" × 12").
- Seeds per boll : 29.
- Weight of seed : 52 milligrammes.
- Weight of lint per seed : 33 milligrammes.
- Ginning percentage : 39.1.

*Yield of seed-cotton per acre* :—

| Year.           | Agricultural Research Station, Sakrand. | Average of all Govt. Farms in Sind on Left-Bank of Indus River. |
|-----------------|-----------------------------------------|-----------------------------------------------------------------|
| 1930-31 .. .. . | 1,840 lbs.                              | ..                                                              |
| 1931-32 .. .. . | 1,652 "                                 | ..                                                              |
| 1932-33 .. .. . | 1,501 "                                 | 897 lbs.                                                        |
| 1933-34 .. .. . | 1,388 "                                 | 1,070 "                                                         |
| 1934-35 .. .. . | 1,552 "                                 | 783 "                                                           |
| 1935-36 .. .. . | 1,266 "                                 | 880 "                                                           |
| 1936-37 .. .. . | 865 "                                   | 930 "                                                           |
| 1937-38 .. .. . | 762 "                                   | 761 "                                                           |

*Area under cultivation* :—

| Year.           | Cultivation from Departmental seed. | Cultivation from seed of other sources. |
|-----------------|-------------------------------------|-----------------------------------------|
| 1931-32 .. .. . | 2,000 acres.                        | ..                                      |
| 1932-33 .. .. . | 6,000 "                             | ..                                      |
| 1933-34 .. .. . | 1,58,900 "                          | ..                                      |
| 1934-35 .. .. . | 13,310 "                            | ..                                      |
| 1935-36 .. .. . | 9,500 "                             | About 2,00,000 acres.                   |
| 1936-37 .. .. . | 12,840 "                            | Do.                                     |
| 1937-38 .. .. . | 11,775 "                            | Do.                                     |

## II.—GRADER'S REPORT.

|                    | 1930-31.                   | 1931-32.                         | 1932-33.                         | 1933-34.                         | 1934-35.                         | 1935-36.                                                           | 1936-37.                                                                                                                                           | 1937-38.                                        |
|--------------------|----------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Graded under.      | Bengal. Barely fine.       | Bengal. Extra Super-fine. White. | Bengal. Extra Super-fine. White. | Bengal. Extra Super-fine. White. | Bengal. Extra Super-fine. White. | P. G. Bengal. Extra Super-fine. Bright white. Very roughish style. | P. G. Bengal. Choice Super-fine. Bright white. Very roughish style.                                                                                | Bengal. Extra Super-fine. White. Very roughish. |
| Length             | 1/2 inch. Fair.            | 11/16 inch. Poor. Fair.          | 5/8 inch. Fair.                  | 11/16 inch. Fair.                | 1/2 inch. Fair. Poor.            | 1/2 inch. Fair. Regular.                                           | 1/2 inch. Fair. Regular.                                                                                                                           | 1/2 inch. Fair. Regular.                        |
| Rate or below rate | Rs. 5 on. Rs. 130. 7-1-31. | Rs. 25 on. Rs. 180. 14-3-32.     | Rs. 40 on. Rs. 163. 12-1-33.     | Rs. 30 on. Rs. 133. 6-4-34.      | Rs. 20 on. Rs. 141. 6-3-35.      | Rs. 25 on. Rs. 150. 8-4-36.                                        | Rs. 50 on. Rs. 185. 1-5-37.                                                                                                                        | Rs. 25 on. Rs. 114. 21-3-38.                    |
| Grading            | ..                         | ..                               | ..                               | ..                               | ..                               | ..                                                                 | Roughish Sind was bought largely in Europe probably for mixing with wool. Demand exceeding supplies; hence abnormally high, even over Broach rate. | ..                                              |



## III.—FIBRE PARTICULARS.

## 1. Fibre-Length Distribution (Balls Sorter):—

| Mean group-length in eighths of an inch.               | Percentage. |          |          |         |          |          |          |          |          |
|--------------------------------------------------------|-------------|----------|----------|---------|----------|----------|----------|----------|----------|
|                                                        | 1929-30.    | 1930-31. | 1931-32. | 1932-33 | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |
| 2                                                      | 1.4         | 2.6      | 2.1      | 1.9     | 1.3      | 1.0      | 1.3      | 1.7      | 0.4      |
| 3                                                      | 3.2         | 7.2      | 3.7      | 6.1     | 3.9      | 3.8      | 3.0      | 3.4      | 2.6      |
| 4                                                      | 10.5        | 17.5     | 12.4     | 22.1    | 11.4     | 10.0     | 10.2     | 10.0     | 5.9      |
| 5                                                      | 28.3        | 37.1     | 33.2     | 38.3    | 28.5     | 28.7     | 32.4     | 31.9     | 26.6     |
| 6                                                      | 38.4        | 24.4     | 30.7     | 22.1    | 31.3     | 34.7     | 35.6     | 37.6     | 43.7     |
| 7                                                      | 14.6        | 8.6      | 13.3     | 7.6     | 15.3     | 15.8     | 13.1     | 12.0     | 17.1     |
| 8                                                      | 3.6         | 2.0      | 4.0      | 1.9     | 5.7      | 4.3      | 3.6      | 3.0      | 3.4      |
| 9                                                      | ..          | ..       | ..       | ..      | 2.6      | 0.2      | 0.8      | 0.1      | 0.3      |
| 2. Fibre-Length (inch) :—                              |             |          |          |         |          |          |          |          |          |
| (a) By Balls Sorter .. ..                              | 0.70        | 0.64     | 0.63     | 0.63    | 0.71     | 0.70     | 0.70     | 0.69     | 0.72     |
| (b) By Beer Sorter .. ..                               | 0.68        | 0.60     | 0.68     | 0.62    | 0.70     | 0.60     | 0.68     | 0.63     | 0.70     |
| 3. Fibre-Length Irregularity (%) .. ..                 | 14.1        | 16.0     | 13.3     | 13.5    | 13.6     | 14.7     | 11.8     | 13.1     | 8.7      |
| 4. Fibre-Weight per inch (millionth of an ounce) .. .. | 0.340       | 0.333    | 0.307    | 0.299   | 0.293    | 0.293    | 0.237    | 0.272    | 0.273    |
| 5. Fibre-Strength (oz.) :—                             |             |          |          |         |          |          |          |          |          |
| (a) By Balls Tester .. ..                              | ..          | ..       | ..       | ..      | ..       | 0.208    | 0.174    | 0.180    | 0.176    |
| (b) By O'Neil Tester .. ..                             | ..          | ..       | ..       | ..      | ..       | 0.218    | 0.178    | 0.186    | 0.107    |
| 6. Fibre-Strength per unit fibre-weight per inch       | ..          | ..       | ..       | ..      | ..       | 0.81     | 0.68     | 0.68     | 0.63     |
| 7. Maturity Test Results (%) :—                        |             |          |          |         |          |          |          |          |          |
| (a) Mature .. ..                                       | ..          | ..       | ..       | ..      | ..       | 77       | 90       | 85       | 86       |
| (b) Half-mature .. ..                                  | ..          | ..       | ..       | ..      | ..       | 27       | 20       | 7        | 9        |
| (c) Immature .. ..                                     | ..          | ..       | ..       | ..      | ..       | 0        | 8        | 8        | 5        |

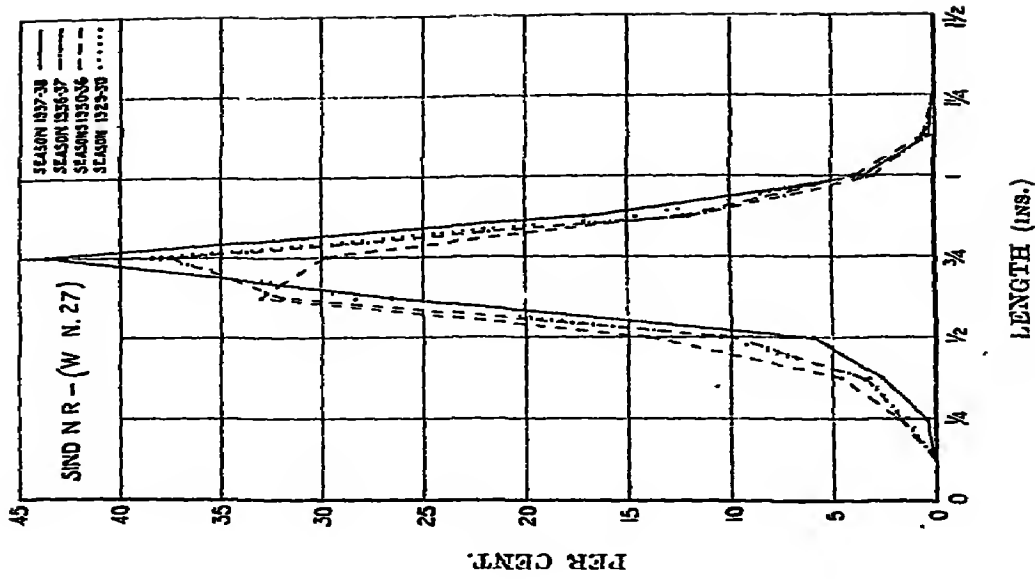


Fig. 6.—Sorter Diagrams for Sind N.R. (W.N. 27)

## IV.—SPINNING TESTS.

1. *Treatment* :—

(a) *Blow-room*.—Upto 1934-35 (inclusive):—Lattice Feeder, Oighton (twice), Hopper, Scutcher (3 times). The 1930-31 and 1931-32 samples were passed through the Crighton (once only). The 1929-30 sample was passed direct through the Crighton (once only).

1935-36 onwards:—Hopper bale opener, Horizontal Cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

(b) *Card-room*.—Upto 1934-35:—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards:—As above but spun from single hank roving on Ring Frame No. 3 which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

2. *Spinning Master's Report* :—

| Season.                    | 1929-30.                       | 1930-31.               | 1931-32.                  | 1932-33.           | 1933-34.               | 1934-35.     | 1935-36.           | 1936-37.            | 1937-38.                          |
|----------------------------|--------------------------------|------------------------|---------------------------|--------------------|------------------------|--------------|--------------------|---------------------|-----------------------------------|
| Colour .. ..               | Creamy-white.                  | White to creamy-white. | White to creamy-white.    | White; bright.     | White to creamy-white. | White.       | White; bright.     | White.              | White to creamy-white; bright.    |
| Cleanliness .. ..          | Clean.                         | A little leafy.        | Clean.                    | Clean.             | Clean.                 | Clean.       | Clean.             | Very clean.         | Clean.                            |
| Feel .. ..                 | Harsh.                         | Harsh.                 | Rough.                    | Rough.             | A little rough.        | Rough.       | Roughish.          | Rough.              | Rough wiry.                       |
| Ginning and noppiness ..   | Fairly well-ginned.            | Well-ginned.           | Well-ginned.              | Well-ginned.       | Well-ginned.           | Well-ginned. | Well-ginned.       | Well-ginned.        | Well-ginned.                      |
| Seeds .. ..                | ..                             | ..                     | Clean.                    | Clean.             | Clean.                 | Clean.       | Clean.             | Good.               | Clean.                            |
| Card-silver .. ..          | ..                             | ..                     | ..                        | ..                 | ..                     | ..           | ..                 | ..                  | ..                                |
| Card-web .. ..             | ..                             | ..                     | Almost even and nep-free. | Even and nep-free. | ..                     | ..           | Even and nep-free. | Good and deep-free. | Good and absolutely free of neps. |
| Weight of ten flat strips. | ..                             | ..                     | 12.5 grams.               | 12.5 grams.        | 14.1 grams.            | 11.8 grams.  | 9.0 grams.         | 11.2 grams.         | 12.1 grams.                       |
| Remarks .. ..              | Staple short, wiry and strong. | ..                     | ..                        | ..                 | ..                     | ..           | ..                 | ..                  | ..                                |

3. *Spinning Test Details and Results* :—See Table 6, page 36.

## V.—REMARKS.

(i) *Fibre*.—The mean fibre-length of this cotton was highly variable upto 1932-33, but since then has been fairly constant. The fibre-length irregularity is rather high in 1930-31, low in 1935-36 and very low in 1937-38. The fibre-weight per inch shows a progressive decrease upto 1935-36 and a small increase afterwards. The 1937-38 sample is slightly longer and more regular in length than its predecessor, it has practically the same fibre-weight per inch and the same percentage of mature hairs, but it has a somewhat lower fibre-strength.

(ii) *Waste*.—Except in 1930-31 and 1936-37 the samples of this cotton have been supplied in a fairly clean condition and have yielded moderately low blow-room loss. The card-room loss is generally 9-10%.

(iii) *Breakages*.—Even in 6's counts this cotton has given very numerous yarn breakages in the ring frame in some seasons. The 1937-38 sample gave fairly numerous breakages in 6's and 8's counts.

(iv) *Yarns*.—This cotton usually gives either even or even to fairly even yarns in 6's and 8's counts, those of 1931-32 being more even than the others. Its yarns are practically free of neps.

(v) *Conclusions*.—As will be seen from the following table this cotton showed an improvement in performance in 1933-35 which, however, has not been maintained in the three subsequent seasons. From its yarn strength results it has been adjudged suitable for spinning upto the following highest standard warp counts in the different seasons :—

|          |         |         |         |         |         |
|----------|---------|---------|---------|---------|---------|
| 1929-30. | .. 6's. | 1932-33 | .. 6's. | 1935-36 | .. 7's. |
| 1930-31  | .. 6's. | 1933-34 | .. 8's. | 1936-37 | .. 7's. |
| 1931-32  | .. 6's. | 1934-35 | .. 9's. | 1937-38 | .. 7's. |

N.B.—Although the 1929-30, 1930-31 and 1932-33 cottons are shown suitable for spinning upto 6's standard warp counts they (especially the 1930-31 cotton) in actual fact are inferior to the 1931-32 cotton.



### I.—AGRICULTURAL DETAILS.

- (viii) *Plant particulars (average) :—*

(ix) *Yield of seed-cotton :—*

|                     |   |   |           |
|---------------------|---|---|-----------|
| 429 lbs. per acre ( | " | " | 1937-38). |
|---------------------|---|---|-----------|

- 1937-38 : 1,034,800.

[illegible]

### III.—FIBRE PARTICULARS.

# 1. Fibre-Length Distribution (Balls Sorter):—

| Mean group-length in eighths<br>of an inch | Percentage. |          |          |          |          |          |          |          |          |  |
|--------------------------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|--|
|                                            | 1929-30.    | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |  |
| 2                                          | 0.3         | 0.3      | 0.7      | 0.7      | 0.8      | 0.8      | 0.5      | 1.0      | 0.4      |  |
| 3                                          | 2.1         | 2.7      | 2.7      | 2.8      | 2.9      | 1.9      | 2.4      | 3.3      | 1.5      |  |
| 4                                          | 5.1         | 5.3      | 0.0      | 0.6      | 0.1      | 4.4      | 5.1      | 7.1      | 3.7      |  |
| 5                                          | 13.6        | 16.7     | 30.1     | 17.0     | 25.6     | 12.2     | 12.8     | 10.8     | 14.0     |  |
| 6                                          | 31.1        | 34.9     | 35.1     | 30.7     | 37.0     | 30.7     | 29.0     | 33.2     | 33.2     |  |
| 7                                          | 33.6        | 27.9     | 15.8     | 28.0     | 18.3     | 33.0     | 33.2     | 20.6     | 32.1     |  |
| 8                                          | 11.4        | 8.8      | 5.9      | 11.1     | 1.7      | 13.1     | 12.1     | 9.4      | 11.0     |  |
| 9                                          | 2.5         | 2.3      | 0.7      | 3.1      | 0.7      | 3.1      | 3.6      | 2.6      | 3.2      |  |
| 10                                         | 0.3         | 0.4      | ..       | ..       | ..       | 0.5      | 1.0      | ..       | 0.3      |  |
| 11                                         | ..          | 0.2      | ..       | ..       | ..       | ..       | ..       | ..       | ..       |  |

# 2. Fibre-Length (inch):—

|                                                            |        |       |       |       |       |       |       |       |       |
|------------------------------------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| (a) By Balls Sorter ..                                     | 0.79   | 0.81  | 0.72  | 0.77  | 0.72  | 0.80  | 0.80  | 0.76  | 0.80  |
| (b) By Hair Sorter ..                                      | 0.79   | 0.82  | 0.73  | 0.78  | 0.74  | 0.83  | 0.81  | 0.76  | 0.78  |
| 3. Fibre-Length Irregularity (%).                          | ..     | 14.9  | 10.7  | 11.9  | 12.4  | 13.3  | 15.0  | 15.2  | 10.6  |
| 4. Fibre-Weight per inch (multiplier of an ounce) ..       | 0.171  | 0.155 | 0.161 | 0.113 | 0.140 | 0.112 | 0.175 | 0.137 | 0.149 |
| 5. Fibre-Strength (oz.):—                                  |        |       |       |       |       |       |       |       |       |
| (a) By Balls Tester ..                                     | 0.150* | 0.166 | 0.198 | 0.147 | 0.150 | 0.130 | 0.150 | 0.160 | 0.143 |
| (b) By O'Neill Tester ..                                   | 0.135* | 0.168 | 0.134 | 0.141 | 0.144 | 0.142 | 0.173 | 0.175 | 0.155 |
| 6. Fibre-Strength per unit fibre-weight per inch ..        | 0.90*  | 1.38  | 0.81  | 1.01  | 1.05  | 0.95  | 1.03  | 1.07  | 0.91  |
| 7. Fibre-Rigidity (millimouth of an ounce, square inch) .. | 0.170* | 0.215 | 0.156 | ..    | ..    | ..    | ..    | ..    | ..    |
| 8. Ribbon-Width (thousanth of an inch) ..                  | 0.71   | 0.69  | 0.70  | 0.74  | ..    | ..    | ..    | ..    | ..    |
| 9. Convolution per inch ..                                 | 105    | 107   | 96    | 108   | ..    | ..    | ..    | ..    | ..    |
| 10. Maturity Test Results (%).                             |        |       |       |       |       |       |       |       |       |
| (a) Mature ..                                              | ..     | ..    | ..    | ..    | ..    | 13    | 40    | 55    | 39    |
| (b) Half-mature ..                                         | ..     | ..    | ..    | ..    | ..    | 27    | 28    | 17    | 24    |
| (c) Immature ..                                            | ..     | ..    | ..    | ..    | ..    | 40    | 23    | 28    | 37    |

\* Mean of three seasons, 1928-29.

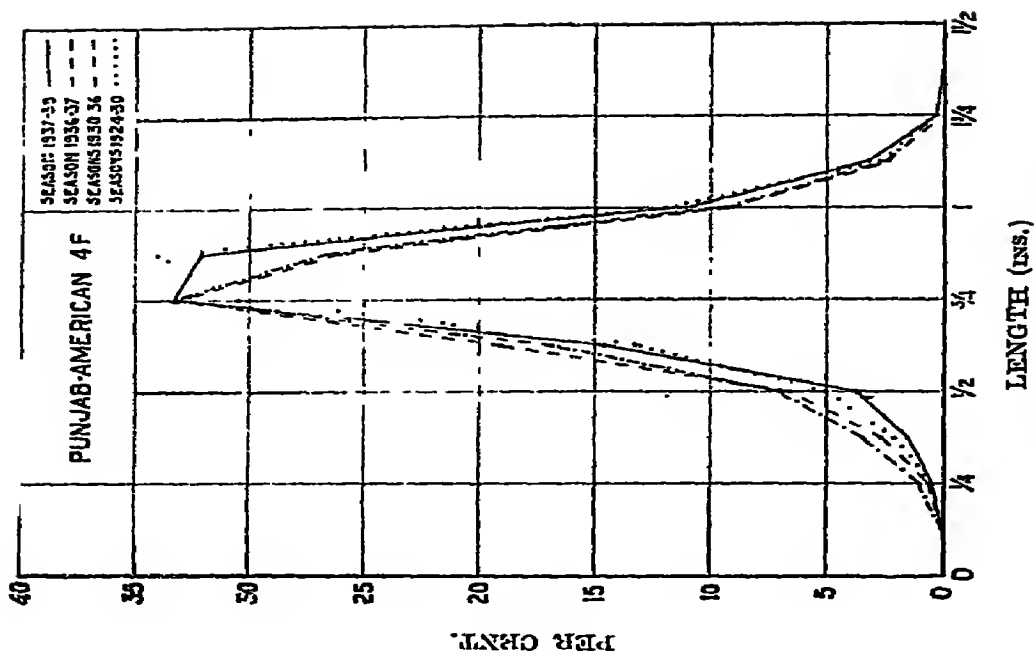


Fig. 7.—Sorter Diagrams for Punjab-American 4 F.

## IV.—SPINNING TESTS.

1. *Treatment* :—

(a) *Blow-room*—Upto 1933-34 (inclusive):—Lattice Feeder, Crighton (twice), Hopper, Scutcher (3 times).

1934-35 onwards:—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

(b) *Card-room*—Upto 1934-35 (inclusive):—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards:—Same as above but spun from single hank roving on Ring frame No. 3 which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

2. *Spinning Master's Report* :—

| Season.                     | 1928-29.                                                                           | 1929-30.                   | 1930-31.       | 1931-32.                                               | 1932-33.                                 | 1933-34.           | 1934-35.                 | 1935-36.        | 1936-37.                 | 1937-38.                               |
|-----------------------------|------------------------------------------------------------------------------------|----------------------------|----------------|--------------------------------------------------------|------------------------------------------|--------------------|--------------------------|-----------------|--------------------------|----------------------------------------|
| Colour .. .. .              | Creamy-white; fairly bright.                                                       | White; bright.             | White; bright. | White.                                                 | White.                                   | White; brightish.  | White to creamy-white.   | White; bright.  | White.                   | White.                                 |
| Cleanliness .. .. .         | A trifle leafy.                                                                    | Leafy.                     | Fairly clean.  | Shows occasional stain; fairly leafy (very fine leaf). | Somewhat leafy.                          | Fairly clean.      | Leafy; a little stained. | A little leafy. | Fairly clean.            | Very leafy.                            |
| Feel .. .. .                | Silky and bodied.                                                                  | Nice soft.                 | Very good.     | Softish.                                               | Fairly good.                             | Good smooth.       | Good.                    | Good.           | Good soft.               | Good.                                  |
| Ginning and neppiness ..    | Well-ginned.                                                                       | Knotted and nepped.        | Well-ginned.   | Well-ginned.                                           | Well-ginned, except for some knottiness. | Well-ginned.       | Somewhat knotted.        | Well-ginned.    | Well-ginned.             | ..                                     |
| Seeds .. .. .               | ..                                                                                 | ..                         | ..             | ..                                                     | ..                                       | ..                 | ..                       | ..              | ..                       | Contains some crushed and whole seeds. |
| Card-silver .. .. .         | ..                                                                                 | ..                         | Clean.         | Clean.                                                 | Almost clean.                            | Clean.             | Clean.                   | Clean.          | Good clean.              | A little leafy.                        |
| Card-web .. .. .            | ..                                                                                 | Fairly clear.              | Very good.     | Even and nep-free.                                     | Good.                                    | Even and nep-free. | Good.                    | Good.           | Good but a little neppy. | Good and nep free.                     |
| Weight of 10 flat strips .. | ..                                                                                 | ..                         | 16.3 grams.    | 16.1 grams.                                            | 15.1 grams.                              | 16.1 grams.        | 24.6 grams.              | 14.6 grams.     | 24.8 grams.              | 22.5 grams.                            |
| Remarks .. .. .             | Very good cotton. Spinning speed reduced in 20's owing to frequent yarn breakages. | Staple regular and strong. | Fully pressed. | ..                                                     | ..                                       | ..                 | ..                       | ..              | ..                       | ..                                     |

3. *Spinning Test Details and Results* :—See Table 7 on page 40.

Card Production for Sample 81 :—11.7 lb. per hour.

Ring Frame Production for 20's A, Sample 81 :—7.71 oz. per spindle per 10 hours.

## V.—REMARKS.

*Fibre*.—The Lyallpur samples are distinctly short in 1931-32 and 1933-34. From 1932 to 1935 they are much finer. The 1937-38 sample is slightly longer and more regular than its predecessor; it is, however, weaker, its intrinsic strength being some 12% less and it possesses a much lower percentage of mature fibres.

*Waste*.—Waste losses in the blow-room and the card-room are rather high in the two seasons, 1928-30. The card-room loss is also high since 1934-35, but the two losses, especially the blow-room loss, are particularly high in 1937-38.

*Breakages*.—Yarn breakages in the ring frame are fairly numerous in the 20's B counts in the three seasons, 1928-31, and numerous in the same count in the following three seasons. They are very numerous in 24's B counts in the three seasons, 1931-34.

*Yarns*.—This cotton generally gives even to fairly even 20's, but the 1928-29 yarns are less, while those of 1930-32, 1935-36 and 1937-38 are more even than usual. Its yarns are usually nep-free or slightly neppy, but those of the two seasons 1928-30 are rather neppy. These two seasons were, in fact, bad for this cotton, when its yarns, besides being unusually uneven and neppy, were very weak. In 1931-32 its yarns are just as weak as in 1929-30, but they are satisfactory in respect of evenness and neppiness.

*Conclusions*.—The yarn strength results of this cotton were very poor indeed in 1928-29. The cotton recovered slowly in the following seasons, reaching a peak value in 1934-35. The current season has witnessed a falling off in its yarn strength, probably owing to the higher percentage of immature fibres. The following are the highest standard warp counts for which the cotton is adjudged suitable in the different seasons :—

|                  |                  |                  |                  |                  |
|------------------|------------------|------------------|------------------|------------------|
| 1924-25 .. 22's. | 1927-28 .. 22's. | 1930-31 .. 22's. | 1933-34 .. 24's. | 1936-37 .. 27's. |
| 1925-26 .. 22's. | 1928-29 .. 16's. | 1931-32 .. 20's. | 1934-35 .. 27's. | 1937-38 .. 24's. |
| 1926-27 .. 24's. | 1929-30 .. 20's. | 1932-33 .. 25's. | 1935-36 .. 26's. |                  |



**8.—PUNJAB-AMERICAN 289F.**

### Seasons.

*Seasons.*

1924-25 (Sample No. 80).  
1925-26 (Sample No. 130).  
1926-27 (Sample No. 234).  
1927-28 (Sample No. 341).  
1928-29 (Sample No. 449).  
1929-30 (Sample No. 660).  
1930-31 (Sample No. 994).

1931-32 (Sample No. 1239).  
1932-33 (Sample No. 1580).  
1933-34 (Sample No. 2103).  
1934-35 (Sample No. 2625).  
1935-36 (Sample No. 2985).  
1936-37 (Sample No. 3460).  
1937-38 (Sample No. 3977).

## I. AGRICULTURAL DETAILS.

**Botanical species :—***Gossypium hirsutum*, Linn.

**History:**—A later selection from acclimatized Punjab-American, than 4F. Seed was first distributed in 1921.

*District of growth* :—Cultivation is mainly confined to the Lower Bari Doab Canal Colony of the Punjab. The particular samples used in these tests have been grown on the farm of the British Cotton Growing Association (Punjab), Ltd., at Khanewal. The 1937-38 sample was supplied by the Cotton Research Botanist, Lyallpur, from the Risalewala farm.

*Growing period* :—Sown from the first week in May upto the end of May, and picked from the third week in October upto the end of January.

**Soil :—**Alluvial loam.

*Rainfall* :—Variable, 35 inches annually in the north-east but much less towards the west and south, being only 6½ inches at Multan.

*Temperature* :—Variable, below freezing point in December and January and rising to a maximum of 116° F. at Lyallpur and 125° F. at Multan in May and June.

*Plant particulars (average values) :—*

- (a) Bolls per plant : 10 (spacing 36" × 15").
- (b) Seeds per boll : 29.
- (c) Weight of seed : 78 milligrammes.
- (d) Weight of lint per seed : 30 milligrammes.
- (e) Ginning percentage : 27.7.

*Yield of seed-cotton :—*Yield in 1937-38 in C. R. B. Farm, Risalewala : 715 lbs. per acre.

*Area under cultivation :—*

|           |        |        |           |         |        |
|-----------|--------|--------|-----------|---------|--------|
| 1925-26 : | 5,000  | acres. | 1932-33 : | 30,920  | acres. |
| 1926-27 : | 5,000  | "      | 1933-34 : | 31,140  | "      |
| 1927-28 : | 3,000  | "      | 1934-35 : | 56,200  | "      |
| 1929-30 : | 4,600  | "      | 1935-36 : | 56,000  | "      |
| 1930-31 : | 14,000 | "      | 1936-37 : | 80,000  | "      |
| 1931-32 : | 18,000 | "      | 1937-38 : | 127,100 | "      |

increase in area since 1929 has been mainly due to the farms managed by the A. (Punjab), Ltd. Upto 1935-36, the area figures are for P.A. 289F; in the two recent seasons they are for all cottons of P.A. 289F type.

## II. GRADER'S REPORT.

[illegible]



III.—FIBRE PARTICULARS.

| Fibre-Length Distribution (Balls Sorter) :—            |        | Percentage. |          |          |          |          |          |          |          |          |          |
|--------------------------------------------------------|--------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Mean group-length in eighths of an inch.               |        | 1924-29.    | 1929-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |
| 3                                                      | 0.4    | 0.4         | 0        | 0.4      | 0.3      | 1.1      | 0.4      | 0.5      | 0.3      | 0.8      | 0.7      |
| 4                                                      | 1.8    | 1.8         | 1.0      | 2.3      | 2.1      | 2.4      | 2.3      | 2.3      | 1.9      | 2.5      | 1.7      |
| 5                                                      | 3.6    | 3.6         | 2.3      | 3.0      | 4.1      | 4.0      | 3.7      | 3.3      | 2.6      | 3.0      | 3.0      |
| 6                                                      | 5.0    | 5.0         | 4.6      | 6.6      | 7.4      | 6.6      | 6.1      | 5.7      | 4.4      | 6.0      | 4.0      |
| 7                                                      | 6.7    | 6.7         | 7.0      | 10.2     | 14.5     | 11.0     | 11.5     | 11.0     | 8.6      | 9.3      | 7.4      |
| 8                                                      | 16.1   | 16.1        | 13.8     | 18.3     | 20.4     | 18.3     | 19.8     | 19.1     | 18.4     | 16.4     | 14.0     |
| 9                                                      | 25.1   | 25.1        | 23.9     | 28.9     | 29.9     | 24.7     | 23.9     | 23.2     | 20.6     | 20.3     | 18.0     |
| 10                                                     | 23.8   | 23.8        | 25.4     | 21.4     | 14.0     | 20.8     | 19.2     | 21.1     | 24.7     | 22.7     | 22.0     |
| 11                                                     | 10.8   | 10.8        | 14.2     | 10.3     | 3.9      | 9.1      | 8.7      | 7.3      | 7.6      | 8.7      | 13.7     |
| 12                                                     | 3.3    | 3.3         | 3.0      | 0.1      | ..       | 2.0      | 2.1      | 1.3      | 1.9      | 2.6      | 3.6      |
| 13                                                     | 0.4    | 0.4         | 1.3      | ..       | ..       | ..       | ..       | ..       | ..       | 1.1      | 0.6      |
| 2. Fibre-Length (inch) :—                              |        |             |          |          |          |          |          |          |          |          |          |
| (a) By Balls Sorter ..                                 | 0.97   | 1.01        | 0.96     | 0.97     | 0.89     | 0.94     | 0.94     | 0.94     | 0.97     | 0.96*    | 1.00     |
| (b) By Ball Sorter ..                                  | 0.98   | 0.96        | 0.97     | 0.90     | 0.90     | 0.90     | 0.94     | 0.93     | 0.97     | 0.95     | 0.98     |
| 3. Fibre-Length Irregularity (%) ..                    | ..     | 10.0        | 20.1     | 17.3     | 22.0     | 19.4     | 19.4     | 19.4     | 18.1     | 20.7     | 20.5     |
| 4. Fibre-Weight per inch (millimoth of an ounce) ..    | 0.122  | 0.142       | 0.142    | 0.122    | 0.114    | 0.114    | 0.119    | 0.120    | 0.122    | 0.124    | 0.113    |
| 5. Fibre-Strength (oz.) :—                             |        |             |          |          |          |          |          |          |          |          |          |
| (a) By Balls Tester ..                                 | 0.131* | 0.140       | 0.139    | 0.123    | 0.123    | 0.123    | 0.093    | 0.115    | 0.158    | 0.142    | 0.129    |
| (b) By O'Neill Tester ..                               | 0.137* | 0.148       | 0.119    | 0.123    | 0.132    | 0.103    | 0.103    | 0.125    | 0.178    | 0.138    | 0.117    |
| 6. Fibre-Strength per unit fibre-weight per inch ..    | 1.10*  | 1.06        | 0.88     | 1.02     | 1.12     | 0.82     | 0.82     | 1.00     | 1.11     | 1.13     | 1.09     |
| 7. Fibre-Rigidity (millimoth of an ounce, square-inch) | 0.079* | 0.101       | 0.129    | 0.078    | 0.080    | ..       | ..       | ..       | ..       | ..       | ..       |
| 8. Ribbon-Width (thousandth of an inch) ..             | 0.04   | 0.61        | 0.62     | 0.50     | 0.00     | ..       | ..       | ..       | ..       | ..       | ..       |
| 9. Convolution per inch ..                             | 715    | 145         | 130      | 110      | 118      | ..       | ..       | ..       | ..       | ..       | ..       |
| 10. Maturity Test Results (%) :—                       |        |             |          |          |          |          |          |          |          |          |          |
| (a) Mature ..                                          | ..     | ..          | ..       | ..       | ..       | ..       | ..       | 54       | 59       | 38       | 55       |
| (b) Half-mature ..                                     | ..     | ..          | ..       | ..       | ..       | ..       | ..       | 20       | 20       | 28       | 22       |
| (c) Immature ..                                        | ..     | ..          | ..       | ..       | ..       | ..       | ..       | 20       | 15       | 34       | 23       |

\* Mean of three seasons, 1920-26.

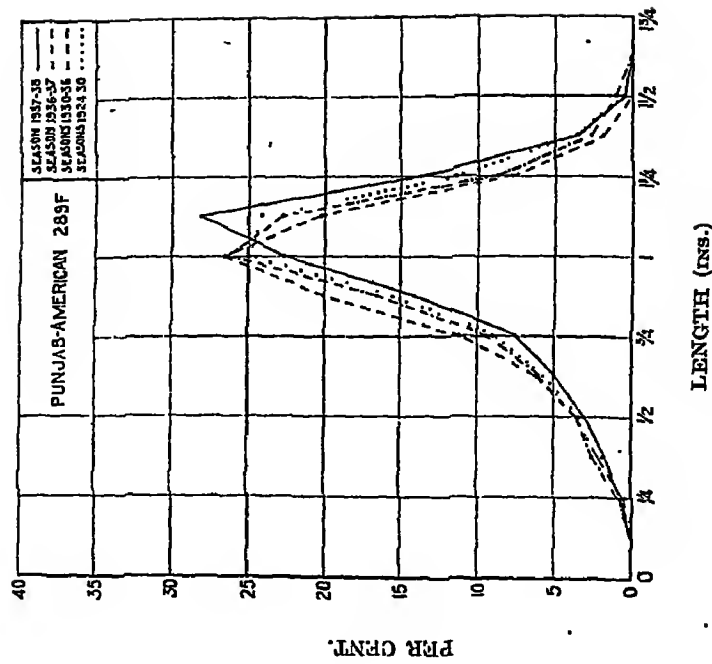


Fig. 8.—Sorter Diagrams for Punjab-American 289F.

## IV.—SPINNING TESTS.

ment :—

) *Blow-room*.—Upto 1934-35 (inclusive):—Lattice Feeder, Crighton (twice), Hopper, Scutcher (3 times). 1935-36 onwards:—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

) *Card-room*.—Upto 1934-35 (inclusive):—Card, Drawing (2 heads), Slubber, Inter, Rover, spun from single hank roving on Ring Frame No. 1. 1935-36 onwards: Card, Drawing (2 heads), Slubber, Inter, Rover, spun from single hank roving on Ring Frame No. 3 which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

*Spinning Master's Report*:—

| Season.      | 1928-29.                     | 1929-30.                                              | 1930-31.                              | 1931-32.                       | 1932-33.               | 1933-34.               | 1934-35.                                     | 1935-36.                          | 1936-37.                         | 1937-38.                               |
|--------------|------------------------------|-------------------------------------------------------|---------------------------------------|--------------------------------|------------------------|------------------------|----------------------------------------------|-----------------------------------|----------------------------------|----------------------------------------|
| .. ..        | Creamy-white; bright.        | Creamy; fairly bright.                                | White to creamy-white.                | White to creamy-white; bright. | White to creamy-white. | White.                 | White; bright.                               | White to creamy-white; brightish. | White.                           | White; dullish.                        |
| .. ..        | Clean.                       | Fairly clean.                                         | A little leafy.                       | A little leafy.                | Somewhat leafy.        | Fairly leafy.          | Fairly leafy.                                | Fairly clean.                     | Not clean, contains leaf & dust. | Leafy, also contains other impurities. |
| .. ..        | Good silky.                  | Good soft.                                            | Good silky.                           | Silky.                         | Good soft.             | Good soft smooth.      | Good.                                        | Good smooth.                      | Good soft.                       | Soft.                                  |
| Neppiness.   | Well-ginned.                 | Seeds cut, flat knotted and nepped.                   | Well-ginned.                          | Knotted and nepped.            | Well-ginned.           | Well-ginned.           | Nepped & knotted.                            | A little knotted.                 | Well-ginned.                     | A trifle knotted.                      |
| .. ..        | ..                           | ..                                                    | ..                                    | ..                             | ..                     | ..                     | Contains a good amount of undeveloped seeds. | Contains 2% undeveloped seeds.    | ..                               | Contains a few undeveloped seeds.      |
| .. ..        | ..                           | ..                                                    | ..                                    | ..                             | ..                     | ..                     | ..                                           | ..                                | ..                               | ..                                     |
| .. ..        | ..                           | ..                                                    | Clean.                                | Clean.                         | Almost clean.          | Clean; soft and silky. | Clean; soft.                                 | Clean.                            | Soft: contains a trifle leaf.    | Soft.                                  |
| .. ..        | ..                           | ..                                                    | First class.                          | Fairly neppy and cloudy.       | Somewhat neppy.        | Even; almost neppy.    | Neppy.                                       | A little neppy and cloudy.        | A little cloudy and neppy.       | A little cloudy & neppy.               |
| Flat strips. | ..                           | ..                                                    | Light; 14.8 grams.                    | 23.5 grams.                    | 19.0 grams.            | 18.4 grams.            | 21.1 grams.                                  | 17.8 grams.                       | 18.1 grams.                      | 20.0 grams.                            |
| .. ..        | Strong fibre; a good sample. | Strong, fine regular staple; a very desirable cotton. | Fully pressed; very desirable sample. | ..                             | ..                     | ..                     | ..                                           | ..                                | ..                               | ..                                     |

*Spinning Test Details and Results*:—See Table 8 on page 44.

Card Production for Sample No. 80 :—11.9 lb. per hour.

Ring Frame Production for 40's, Sample 80 :—2.42 oz. per spindle per 10 hours.

## V. REMARKS.

*Fibre*.—The seasonal variation in the fibre properties of this cotton though small may occasionally assume quite large values. The fibre-length is below average in 1931-32. The fibre-weight per inch is high in the two seasons, 1929-31, and in 1935-36. The fibre-strength is unusually low in 1933-34, when the fibre-weight per unit fibre-weight per inch assumed the lowest value hitherto recorded. The cotton is longer and finer than its predecessor and contains a higher percentage of hairs. Its intrinsic fibre-strength, however, is somewhat lower and it shows no marked improvement in fibre-length regularity over its predecessor.

*Waste*.—The losses in the blow-room and the card are, on the whole, rather high for this cotton.

) *Breakages*.—Yarn breakages in the ring frame are generally few in 20's and 30's counts, but fairly numerous in 40's counts.

*Yarns*.—This cotton usually gives even to fairly even 30's and fairly even to 40's. With few exceptions its yarns are either neppy or very neppy, though in 1933-34 and 1935-36 they are very much better than usual.

*Conclusions*.—Except for the neppiness of its yarns, this cotton has generally given very good results among the Standard Indian cottons. It shows a bad throw-back in 1932-33 and 1933-34 as compared with 1935-36 in regard to neppiness. The following are the best standard warp counts for which the cotton is suitable in the different seasons :—

|         |    |    |       |         |    |    |       |
|---------|----|----|-------|---------|----|----|-------|
| 1924-25 | .. | .. | 34's. | 1931-32 | .. | .. | 39's. |
| 1925-26 | .. | .. | 32's. | 1932-33 | .. | .. | 44's. |
| 1926-27 | .. | .. | 40's. | 1933-34 | .. | .. | 45's. |
| 1927-28 | .. | .. | 42's. | 1934-35 | .. | .. | 44's. |
| 1928-29 | .. | .. | 39's. | 1935-36 | .. | .. | 45's. |
| 1929-30 | .. | .. | 42's. | 1936-37 | .. | .. | 44's. |
| 1930-31 | .. | .. | 44's. | 1937-38 | .. | .. | 45's. |

[illegible]

\* Diameter of ring from front roller—1". Diameter of rings—11".

### 9.—MOLLISONI (Bengals).

|                            |                            |
|----------------------------|----------------------------|
| <i>Seasons..</i>           | 1925-26 (Sample No. 122).  |
|                            | 1926-27 (Sample No. 230).  |
|                            | 1927-28 (Sample No. 324).  |
|                            | 1928-29 (Sample No. 450).  |
|                            | 1929-30 (Sample No. 043).  |
|                            | 1930-31 (Sample No. 996).  |
|                            | 1931-32 (Sample No. 1240). |
|                            | 1932-33 (Sample No. 1581). |
|                            | 1933-34 (Sample No. 2104). |
|                            | 1934-35 (Sample No. 2620). |
|                            | 1935-36 (Sample No. 3092). |
|                            | 1936-37 (Sample No. 3423). |
| 1937-38 (Sample No. 3987). |                            |

## I.—AGRICULTURAL DETAILS.

**Botanical species :—***Gossypium indicum* var *Mollisoni*, Gamble.

**History :—**A selection from a Punjab *desi* cotton ; it was first issued about 1914.

**District of growth :—**Throughout the Cotton Belt of the Punjab. The particular samples used in these tests have been grown on the Farm of the British Cotton Growing Association (Punjab), Limited, at Khanewal. The 1937-38 sample was supplied by the Cotton Research Botanist, Lyallpur, from the Risalewala Farm.

*Growing period* :—Sown from the first week of May upto the end of May, and picked from the last week in September upto the last week in December.

**Soil :—**Alluvial loam.

**Rainfall** :—Variable, 35 inches annually in the north-east, but much less towards the west and south, being only 6½ inches at Multan.

*Temperature* :—Variable—below freezing point in December and January and rising to a maximum of 116° F. at Lyallpur and 125° F. at Multan in May and June.

**Plant particulars (average values) :—**

- (a) Bolls per plant : 15 (spacing : 30" x 15").  
 (b) Seeds per boll : 24.  
 (c) Weight of seed : 54 milligrammes.  
 (d) Weight of lint per seed : 34 milligrammes.  
 (e) Ginning percentage : 33.8.

**Yield of seed-cotton :—**1,207 lbs. per acre (B. C. G. A. Farm, Khanewal, 1921-25) ; 918 lbs. per acre in 1929-30, and 720 lbs. in 1931-32 ; 1,500 lbs. per acre in 1934-35 in C. R. B. Farm, Risalewala ; 1,250 lbs. per acre in 1935-36 in Risalewala Farm ; 847 lbs. per acre in 1936-37 ; 789 lbs. per acre in 1937-38.

**Area under cultivation :—**

|         |    |                 |         |    |                 |                              |
|---------|----|-----------------|---------|----|-----------------|------------------------------|
| 1927-28 | .. | 2,66,000 acres. | 1933-34 | .. | 7,27,560 acres. |                              |
| 1928-29 | .. | 3,08,600 "      | 1934-35 | .. | 6,29,540 "      |                              |
| 1929-30 | .. | 1,85,800 "      | 1935-36 | .. | 7,27,200 "      |                              |
| 1930-31 | .. | 5,15,700 "      | 1936-37 | .. | 9,58,370 "      |                              |
| 1931-32 | .. | 5,72,000 "      | 1937-38 | .. | 8,43,000 "      | (includes area under M60A2). |
| 1932-33 | .. | 5,10,080 "      |         |    |                 |                              |

## II.—GRADER'S REPORT.

[illegible]

## III.—FIBRE PARTICULARS.

## 1. Fibre-Length Distribution (Balls Sorter) :—

| Mean group-length in eighths of an inch.                  | Percentage. |          |          |          |          |          |          |          |          |          |
|-----------------------------------------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|                                                           | 1928-29.    | 1929-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |
| 2                                                         | 1.0         | 0.3      | 1.1      | 0.0      | 1.1      | 1.0      | 1.2      | 1.0      | 1.5      | 1.3      |
| 3                                                         | 2.8         | 2.4      | 3.7      | 3.2      | 2.8      | 3.0      | 2.8      | 2.7      | 3.0      | 2.1      |
| 4                                                         | 8.6         | 8.4      | 11.4     | 11.1     | 6.1      | 12.0     | 9.2      | 7.0      | 10.3     | 6.1      |
| 5                                                         | 27.5        | 31.7     | 34.5     | 33.0     | 22.4     | 32.2     | 26.2     | 21.3     | 25.4     | 10.3     |
| 6                                                         | 41.4        | 40.4     | 34.0     | 34.8     | 38.1     | 32.5     | 37.3     | 35.6     | 34.2     | 35.0     |
| 7                                                         | 14.6        | 13.0     | 11.2     | 10.8     | 20.2     | 12.4     | 17.0     | 21.5     | 16.3     | 24.7     |
| 8                                                         | 3.7         | 3.4      | 3.6      | 3.4      | 6.8      | 4.0      | 5.1      | 7.5      | 6.7      | 8.4      |
| 9                                                         | 0.4         | ..       | 0.5      | 0.8      | 0.5      | 0.5      | 0.6      | 2.2      | 2.4      | 2.2      |
| 10                                                        | ..          | ..       | ..       | ..       | ..       | 0.3      | ..       | 0.3      | 0.3      | ..       |
| 2. Fibre-Length (inch) :—                                 |             |          |          |          |          |          |          |          |          |          |
| (a) By Balls Sorter                                       | 0.71        | 0.70     | 0.08     | 0.00     | 0.74     | 0.08     | 0.71     | 0.74     | 0.72     | 0.70     |
| (b) By Baer Sorter                                        | 0.70        | 0.68     | 0.70     | 0.70     | 0.73     | 0.60     | 0.73     | 0.70     | 0.71     | 0.75     |
| 3. Fibre-Length Irregularity (%) :—                       | ..          | 9.8      | 11.0     | 11.0     | 11.5     | 13.0     | 12.0     | 12.2     | 14.4     | 12.0     |
| 4. Fibre-Weight per inch (millionth of an ounce)          | 0.308       | 0.272    | 0.287    | 0.242    | 0.274    | 0.292    | 0.268    | 0.264    | 0.309    | 0.230    |
| 5. Fibre-Strength (oz.) :—                                |             |          |          |          |          |          |          |          |          |          |
| (a) By Balls Tester                                       | 0.185*      | 0.173    | 0.163    | 0.197    | 0.169    | 0.181    | 0.181    | 0.177    | 0.155    | 0.104    |
| (b) By O'Neill Tester                                     | 0.177*      | 0.161    | 0.172    | 0.170    | 0.175    | 0.200    | 0.100    | 0.190    | 0.103    | 0.156    |
| 6. Fibre-Strength per unit fibre-weight per inch.         | 0.50*       | 0.41     | 0.50     | 0.78     | 0.63     | 0.03     | 0.71     | 0.71     | 0.52     | 0.70     |
| 7. Fibre-Rigidity (millionth of an ounce, square-inch) :— | 0.400*      | 0.386    | 0.420    | 0.354    | ..       | ..       | ..       | ..       | ..       | ..       |
| 8. Ribbon-Width (thousandth of an inch)                   | 0.78        | 0.81     | 0.70     | 0.72     | 0.78     | ..       | ..       | ..       | ..       | ..       |
| 9. Convolutions per inch                                  | 90          | 87       | 00       | 78       | 80       | ..       | ..       | ..       | ..       | ..       |
| 10. Maturity Test Results (%) :—                          |             |          |          |          |          |          |          |          |          |          |
| (a) Mature                                                | ..          | ..       | ..       | ..       | ..       | ..       | 73       | 72       | 80       | 80       |
| (b) Half-mature                                           | ..          | ..       | ..       | ..       | ..       | ..       | 21       | 21       | 13       | 12       |
| (c) Immature                                              | ..          | ..       | ..       | ..       | ..       | ..       | 6        | 7        | 7        | 8        |

\* Mean of three seasons, 1928-29.

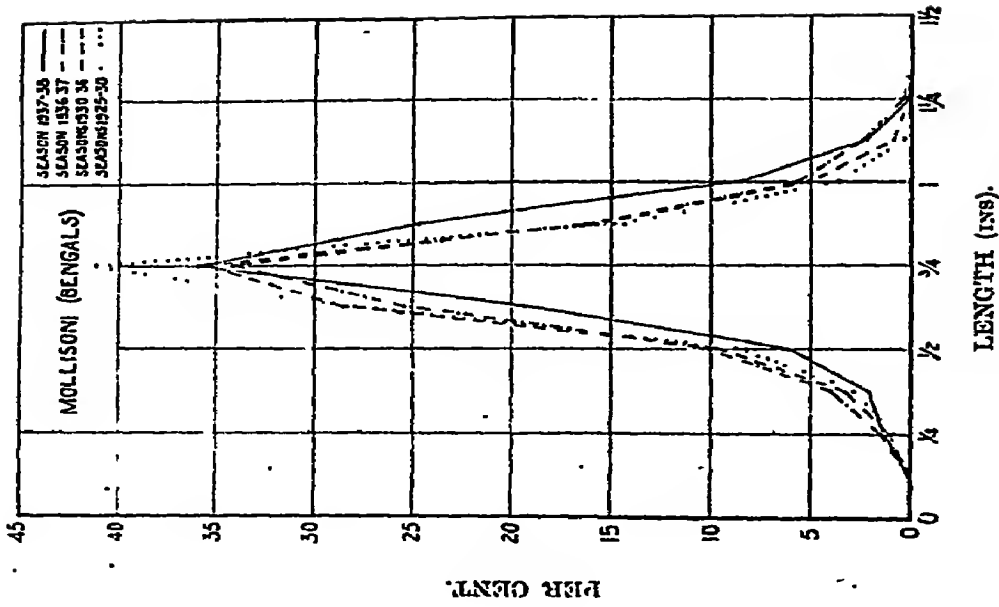


Fig. 9.—Sorter Diagrams for Mollisoni (Bengals).

## IV.—SPINNING TESTS.

ment :—

**Blow-room.**—Upto 1934-35 (inclusive) :—Lattice Feeder, Crighton (once), Hopper, Scutcher (3 times). The 1928-29 and 1930-31 to 1934-35 samples were passed twice through the Crighton. The 1926-27, 1927-28 and 1928-29 samples were passed twice through the Scutcher.

1935-36 onwards :—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

**Card-room.**—Upto 1934-35 (inclusive) :—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards :—As above but spun from single hank roving on Ring Frame No. 3, which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

**Spinning Master's Report :—**

| Season.    | 1928-29.                       | 1929-30.      | 1930-31.                       | 1931-32.                  | 1932-33.               | 1933-34.               | 1934-35.               | 1935-36.     | 1936-37.               | 1937-38.                             |
|------------|--------------------------------|---------------|--------------------------------|---------------------------|------------------------|------------------------|------------------------|--------------|------------------------|--------------------------------------|
| ..         | White to creamy-white; bright. | White.        | White; bright.                 | White; bright.            | White to creamy-white. | White to creamy-white. | White to creamy-white. | White.       | White to creamy-white. | White.                               |
| ss ..      | Clean.                         | Fairly clean. | Fairly clean.                  | Fairly clean.             | Fairly clean.          | Fairly clean.          | Fairly clean.          | Clean.       | Clean.                 | Leafy.                               |
| ..         | Roughish.                      | Harsh.        | Good.                          | Slightly rough.           | Rough.                 | Roughish.              | Roughish.              | Roughish.    | Fairly rough.          | Roughish.                            |
| and nep-   | Well-ginned.                   | Well-ginned.  | Very well-ginned.              | Well-ginned.              | Well-ginned.           | Well-ginned.           | Well-ginned.           | Well-ginned. | Well-ginned.           | Well-ginned.                         |
| ..         | ..                             | ..            | ..                             | ..                        | ..                     | ..                     | ..                     | ..           | ..                     | ..                                   |
| cr ..      | ..                             | ..            | ..                             | Clean.                    | Clean.                 | Clean.                 | Clean.                 | Clean.       | Clean.                 | Fairly clean.                        |
| ..         | ..                             | ..            | ..                             | Nep-free and almost even. | Good.                  | Even and nep-free.     | Even and nep-free.     | Good.        | Good.                  | Good.                                |
| of 10 flat | ..                             | ..            | ..                             | 14.0 grams.               | 12.3 grams.            | 14.2 grams.            | 14.7 grams.            | 13.2 grams.  | 15.6 grams.            | Absolutely free of neps. 14.0 grams. |
| ..         | Very good sample of its class. | ..            | Very good sample of its class. | ..                        | ..                     | ..                     | ..                     | ..           | ..                     | ..                                   |

**Spinning Details and Results :—**See Table 9, page 48.

## V.—REMARKS.

**Fibre.**—The mean fibre-length is generally about 0.70", though in some seasons, 1932-33, 1935-36 and 1937-38 it is higher than the average. The fibre-weight is even more variable, its value in 1937-38 being 25 per cent. less than that in the year. Fibre-length irregularity has shown a tendency to increase upto 1936-37. Length is also variable, but fibre-strength per unit fibre-weight per inch is fairly except in 1931-32 and 1936-37. The 1937-38 cotton is longer, more regular than its predecessor, while it possesses practically the same strength and perfect mature hairs.

**Waste.**—This cotton has generally been received in a fairly clean condition and has loss of 5-7 per cent. in the blow room, but the 1931-32 and 1937-38 samples were very wasty. The card-room loss is usually 8-9 per cent., though it has been higher since 1933-34.

**Breakages.**—Yarn breakages in the ring frame have been fairly numerous even since 1929-30, which may partly be due to the employment of higher speeds. Counts, with moderate twist, this cotton usually gives fairly numerous breakages, but in the two seasons, 1933-35, it gave many more breakages than usual.

**Yarns.**—Yarns spun from this cotton vary considerably in evenness, though since they have shown an improvement in this respect. Its yarns are practically free from neps. The best strength results were obtained in 1932-33 and the next best in 1937-38.

**Conclusion.**—The following are the highest standard warp counts for which this cotton is adjudged suitable in the different seasons :—

|         |    |      |         |    |       |         |    |       |
|---------|----|------|---------|----|-------|---------|----|-------|
| 1925-26 | .. | 6's. | 1930-31 | .. | 8's.  | 1935-36 | .. | 8's.  |
| 1926-27 | .. | 8's. | 1931-32 | .. | 8's.  | 1936-37 | .. | 7's.  |
| 1927-28 | .. | 8's. | 1932-33 | .. | 10's. | 1937-38 | .. | 9½'s. |
| 1928-29 | .. | 7's. | 1933-34 | .. | 8's.  |         |    |       |
| 1929-30 | .. | 8's. | 1934-35 | .. | 9's.  |         |    |       |

TABLE 9.—SPINNING TEST RESULTS FOR MOLLISONI.

| HANK (1937-38). |  |  |  |  |  |  |  |  |  | TRAVELLER COUNTS. |  |  |  |  |  |  |  |  |  | SPINDLE SPEED (1937-38). |  |  |  |  |  |  |  |  |  |
|-----------------|--|--|--|--|--|--|--|--|--|-------------------|--|--|--|--|--|--|--|--|--|--------------------------|--|--|--|--|--|--|--|--|--|
| Card            |  |  |  |  |  |  |  |  |  | 8's               |  |  |  |  |  |  |  |  |  | 8'sA                     |  |  |  |  |  |  |  |  |  |
| Slubber         |  |  |  |  |  |  |  |  |  | 7                 |  |  |  |  |  |  |  |  |  | 6,700 r.p.m.             |  |  |  |  |  |  |  |  |  |
| Inter           |  |  |  |  |  |  |  |  |  | 10's              |  |  |  |  |  |  |  |  |  | 8'sB                     |  |  |  |  |  |  |  |  |  |
| Rover           |  |  |  |  |  |  |  |  |  | 5                 |  |  |  |  |  |  |  |  |  | 7,400 r.p.m.             |  |  |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |                   |  |  |  |  |  |  |  |  |  | 10's                     |  |  |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |                   |  |  |  |  |  |  |  |  |  | 7,925 r.p.m.             |  |  |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |                   |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |                   |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |
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\* Diameter of ring frame front roller—1 inch. Diameter of rings—1 1/2 inch.



## 10.—ALIGARH A. 19.

| Seasons.                | Seasons.                   | Seasons.                   |
|-------------------------|----------------------------|----------------------------|
| 24-25 (Sample No. 22).  | 1929-30 (Sample No. 693).  | 1934-35 (Sample No. 2710). |
| 25-26 (Sample No. 111). | 1930-31 (Sample No. 948).  | 1935-36 (Sample No. 3017). |
| 26-27 (Sample No. 227). | 1931-32 (Sample No. 1286). | 1936-37 (Sample No. 3484). |
| 27-28 (Sample No. 352). | 1932-33 (Sample No. 1657). | 1937-38 (Sample No. 3945). |
| 28-29 (Sample No. 482). | 1933-34 (Sample No. 2185). |                            |

## I.—AGRICULTURAL DETAILS.

*Botanical species* :—*Gossypium neglectum roseum*.

*History* :—A re-selection from Aligarh White Flower, itself a selected "Roseum" type of United Provinces *desi* (Bengals) cotton, a good yielder of high ginning percentage, with kapas of good colour, but coarse and very short. Single plant selections from Aligarh White Flower were first subjected to comparative field trials in 1917; by 1921, selection A. 19 had shown its superiority over all others tried, and from then onwards it was multiplied for distribution.

*District of growth* :—Western districts of the United Provinces. The particular samples used in these tests have been grown on the Government Farm, Aligarh, upto 1930-31. Since 1931-32, the samples were supplied from Kalai farm in Aligarh district.

*Growing period* :—Sown in the 3rd and 4th week in May, and picked from the 3rd week in September upto the last week in November; in 1937-38, picked from the 1st week in September upto the 3rd week of October 1937.

*Soil* :—Alluvium of the Gangetic Plain. Soil is clay loam and loam in the Kalai farm.

*Rainfall* :—Variable—from 21 to 40 inches annually. In 1929-30 the crop suffered from draught, and the cotton was grown under field conditions with canal irrigation. In 1934-35, the crop suffered much owing to heavy rains during September and October, the total rainfall being 34.84"; in 1936-37 also the crop suffered much due to heavy rains in August and September 1936 and hence the outturn is very low. Total rainfall from 1-6-36 to 15-2-37 : 40.54"; June 1937 to 11th February 1938 : 12.8". Due to heavy rains in September the crop suffered to some extent.

*Temperature* :—Means at Aligarh : 93° F. (June); 60° F. (December).

*Plant particulars (average values)* :—

- Bolls per plant : 25 (spacing : 18" × 18").
- Seeds per boll : 24.
- Weight of seed : 54 milligrammes.
- Weight of lint per seed : 34 milligrammes.
- Ginning percentage : 38.

*Yield of seed-cotton* :—918 lbs. per acre (average for 10 seasons, 1918-27, at Aligarh Farm). 709 lbs. per acre in 1931-32, 921 lbs. per acre in 1932-33; 560 lbs. in 1933-34 as the rain damaged the crops during September and October; 717 lbs. in 1934-35; 305 lbs. in 1936-37; 1,271 lbs. per acre in 1937-38.

*Area under cultivation* :—

|         |    |              |         |    |               |
|---------|----|--------------|---------|----|---------------|
| 1924-25 | .. | 2,500 acres. | 1931-32 | .. | 51,850 acres. |
| 1925-26 | .. | 5,000 "      | 1932-33 | .. | 49,430 "      |
| 1926-27 | .. | 15,000 "     | 1934-35 | .. | 30,250 "      |
| 1927-28 | .. | 30,000 "     | 1935-36 | .. | 22,175 "      |
| 1928-29 | .. | 30,000 "     | 1936-37 | .. | 10,097 "      |
| 1929-30 | .. | 45,000 "     | 1937-38 | .. | 7,079 "       |
| 1930-31 | .. | 80,000 "     |         |    |               |

## II.—GRADER'S REPORT.

|                      | 1928-29.         | 1929-30.         | 1930-31.         | 1931-32.                    | 1932-33.   | 1933-34.     | 1934-35.             | 1935-36.           | 1936-37.                      | 1937-38.         |
|----------------------|------------------|------------------|------------------|-----------------------------|------------|--------------|----------------------|--------------------|-------------------------------|------------------|
| valued ..            | Bengal.          | Bengal.          | Bengal.          | Bengal.                     | Bengal.    | Bengal.      | Bengal.              | Fully Good Bengal. | Fully Good Bengal May.        | Bengal.          |
| .. ..                | Extra Superfine. | Extra Superfine. | Extra Superfine. | Extra Superfine.            | Superfine. | Superfine.   | Superfine.           | Extra Superfine.   | Extra Superfine.              | Extra Superfine. |
| .. ..                | White.           | White.           | White.           | White.                      | White.     | White.       | White.               | Bright white.      | White; very slightly stained. | White.           |
| length ..            | 5/8 inch.        | 5/8 inch.        | 5/8 inch.        | 5/8 inch.                   | 3/4 inch.  | 5/8 inch.    | 5/8 inch.            | 9/16 inch.         | 9/16 inch.                    | 1/2 inch.        |
| strength ..          | Good.            | Good.            | Fair.            | Fair.                       | Fair.      | Fair.        | Good.                | Fair.              | Fair.                         | Fair.            |
| ty ..                | Good.            | Fair.            | Fair.            | Fair.                       | Fair.      | Barely fair. | Regular.             | Regular.           | Regular.                      | Regular.         |
| above or contract .. | Rs. 40 on.       | Rs. 40 on.       | Rs. 15 on.       | Rs. 25 on.                  | Rs. 35 on. | Rs. 20 on.   | Rs. 25 on.           | Rs. 30 on.         | Rs. 15 on.                    | Rs. 15 on.       |
| valuation ..         | Rs. 275.         | Rs. 100.         | Rs. 180.         | Rs. 160.                    | Rs. 141.   | Rs. 132.     | Rs. 133-8.           | Rs. 140.           | Rs. 107.                      | Rs. 120.         |
| .. ..                | 18-8-29.         | 18-3-30.         | 7-1-31.          | 14-8-32.                    | 27-2-33.   | 20-3-34.     | 11-4-35.             | 10-1-36.           | 13-3-37.                      | 11-3-38.         |
| .. ..                |                  |                  |                  | Like Com-<br>hla<br>cotton. |            |              | Slightly<br>stained. |                    |                               |                  |



## III.—FIBRE PARTICULARS.

## 1.—Fibre-Length Distribution (Balls Sorter):—

|                                                         | Percentage. |          |          |          |          |          |          |          |          |          |
|---------------------------------------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|                                                         | 1924-25.    | 1929-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |
| Mean group-length in eighths of an inch.                |             |          |          |          |          |          |          |          |          |          |
| 2                                                       | 0.6         | 0.8      | 1.8      | 0.9      | 1.3      | 1.8      | 1.2      | 1.1      | 2.0      | 1.0      |
| 3                                                       | 2.0         | 3.0      | 4.4      | 4.2      | 4.1      | 6.9      | 4.6      | 3.9      | 4.2      | 4.5      |
| 4                                                       | 9.5         | 9.8      | 13.7     | 12.3     | 13.3     | 18.0     | 17.2     | 13.9     | 16.1     | 17.5     |
| 5                                                       | 30.2        | 31.1     | 42.1     | 37.0     | 34.2     | 36.3     | 35.0     | 30.2     | 33.0     | 35.5     |
| 6                                                       | 39.6        | 37.6     | 28.1     | 28.2     | 30.3     | 26.6     | 28.8     | 29.3     | 23.0     | 27.5     |
| 7                                                       | 14.4        | 13.4     | 8.3      | 10.0     | 12.4     | 8.0      | 9.3      | 10.1     | 9.8      | 10.2     |
| 8                                                       | 2.7         | 3.7      | 1.4      | 4.4      | 4.0      | 2.2      | 2.9      | 4.0      | 3.4      | 2.9      |
| 9                                                       | 0.1         | 0.6      | ..       | ..       | 0.4      | 0.3      | 0.1      | 0.0      | ..       | ..       |
| 2. Fibre-Length (inch):—                                |             |          |          |          |          |          |          |          |          |          |
| (a) By Balls Sorter .. ..                               | 0.70        | 0.70     | 0.65     | 0.67     | 0.68     | 0.61     | 0.60     | 0.67     | 0.60     | 0.66     |
| (b) By Baer Sorter .. ..                                | 0.70        | 0.67     | 0.67     | 0.66     | 0.60     | 0.61     | 0.60     | 0.65     | 0.64     | 0.68     |
| 3. Fibre-Length Irregularity (%):—                      |             |          |          |          |          |          |          |          |          |          |
| 4. Fibre-Weight per inch (millionths of an ounce).      | ..          | 11.5     | 11.8     | 11.1     | 12.5     | 11.5     | 13.0     | 11.1     | 13.5     | 13.6     |
| 5. Fibre-Strength (oz.):—                               | 0.304       | 0.277    | 0.301    | 0.314    | 0.290    | 0.292    | 0.271    | 0.204    | 0.275    | 0.292    |
| (a) By Balls Tester .. ..                               | 0.203*      | 0.200    | 0.200    | 0.208    | 0.227    | 0.181    | 0.229    | 0.205    | 0.203    | 0.192    |
| (b) By O'Neill Tester .. ..                             | 0.204*      | 0.222    | 0.203    | 0.210    | 0.234    | 0.193    | 0.213    | 0.203    | 0.192    | 0.203    |
| 6. Fibre-Strength per unit fibre-weight per inch.       | 0.66*       | 0.70     | 0.68     | 0.68     | 0.70     | 0.72     | 0.81     | 0.78     | 0.72     | 0.70     |
| 7. Fibre-Rigidity (millionths of an ounce, square-inch) | 0.484*      | 0.506    | 0.472    | 0.607    | ..       | ..       | ..       | ..       | ..       | ..       |
| 8. Ribbon-Width (thousandths of an inch)                | 0.79        | 0.78     | 0.77     | 0.75     | 0.79     | ..       | ..       | ..       | ..       | ..       |
| 9. Contortions per inch:                                | 89          | 71       | 69       | 68       | 80       | ..       | ..       | ..       | ..       | ..       |
| 10. Maturity Test Results (%):—                         |             |          |          |          |          |          |          |          |          |          |
| (a) Mature .. ..                                        | ..          | ..       | ..       | ..       | ..       | ..       | 78       | 77       | 67       | 88       |
| (b) Half-mature .. ..                                   | ..          | ..       | ..       | ..       | ..       | ..       | 12       | 15       | 15       | 0        |
| (c) Immature .. ..                                      | ..          | ..       | ..       | ..       | ..       | ..       | 10       | 8        | 18       | 0        |

\* Mean of three seasons, 1929-30.

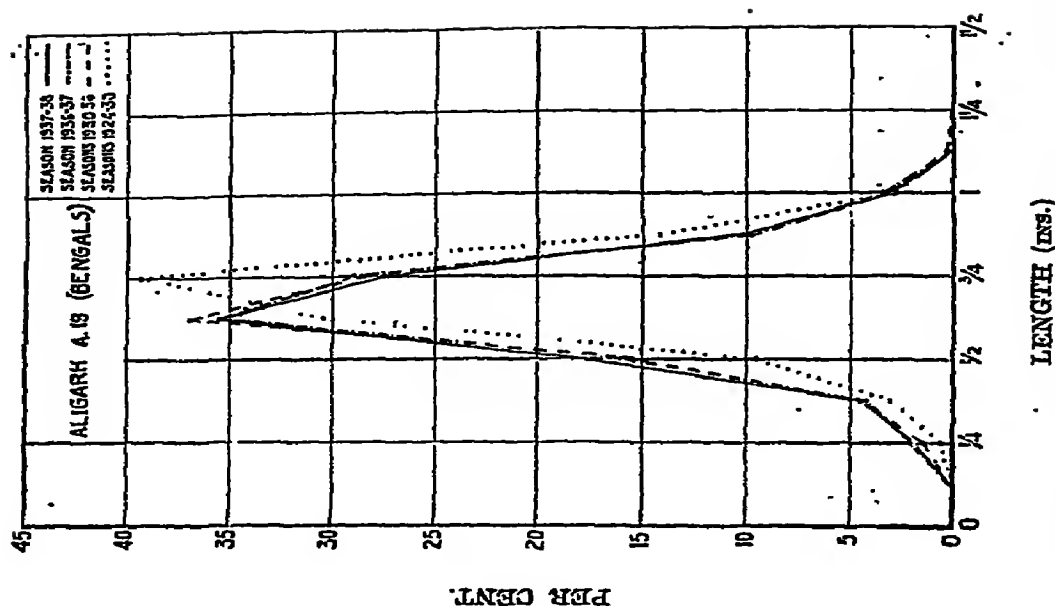


Fig. 10.—Sorter Diagrams for Aligath A. 10—(Bengals.)

## IV.—SPINNING TESTS.

1. *Treatment* :—

(a) *Blow-room*.—1924-25, 1932-33, 1933-34 and 1934-35 :—Lattice Feeder, Crighton (twice), Hopper, Scutcher (3 times). The 1925-26, 1926-27, 1930-31 and 1931-32 samples were passed direct through the Crighton (once only); the 1927-28 and 1928-29, samples were passed only once through the Crighton and twice through the Scutcher, and the 1929-30 sample was passed only once through the Crighton and thrice through the Scutcher.

1935-36 onwards :—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Gago exhaust, Hopper feeder, Scutcher (3 times).

(b) *Card-room*.—Upto 1934-35 (inclusive) :—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards :—As above but spun from single hank roving on Ring Frame No. 3, which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

2. *Spinning Master's Report* :—

| Season.                         | 1928-29.         | 1929-30.                        | 1930-31.                           | 1931-32.                              | 1932-33.                                                 | 1933-34.                          | 1934-35.                          | 1935-36.                       | 1936-37.                        | 1937-38.                        |
|---------------------------------|------------------|---------------------------------|------------------------------------|---------------------------------------|----------------------------------------------------------|-----------------------------------|-----------------------------------|--------------------------------|---------------------------------|---------------------------------|
| Colour ..                       | White.           | White; bright.                  | White.                             | White.                                | White.                                                   | White to creamy-white.            | White to creamy-white.            | White to creamy-white; bright. | White.                          | White to creamy-white.          |
| Cleanliness ..                  | Perfectly clean. | Perfectly clean.                | Perfectly clean.                   | Very clean.                           | Somewhat leafy.                                          | Slightly stained; fairly clean.   | Occasional stain; somewhat leafy. | Fairly clean.                  | Fairly clean; occasional stain. | Clean.                          |
| Feel ..                         | Very rough.      | Good.                           | Typical (harsh) feel of its class. | Rough.                                | Roughish feel.                                           | Roughish.                         | Rough.                            | Roughish.                      | Rough.                          | Roughish.                       |
| Ginning and nappiness. Seeds .. | Well-ginned.     | Very well-ginned.               | Well-ginned.                       | Well-ginned.                          | Well-ginned. 1.25 per cent. ginned and unginned.         | Well-ginned. Some cut and ginned. | Well-ginned. 3/4 per cent.        | Well-ginned.                   | Well-ginned.                    | Well-ginned.                    |
| Card-aliver ..                  | ..               | ..                              | ..                                 | Clean.                                | Clean.                                                   | Clean.                            | Almost clean.                     | Clean.                         | Clean.                          | Clean.                          |
| Card-web ..                     | ..               | ..                              | ..                                 | Nep-free.                             | Fairly even and nep-free.                                | Fairly even.                      | Even and nep-free.                | Good.                          | Fairly good.                    | Good; also-lutely free of neps. |
| Weight of ten flat Strips ..    | ..               | ..                              | ..                                 | 12.4 grams                            | 13.0 grams                                               | 14.3 grams                        | 16.2 grams                        | 11.0 grams                     | 14.0 grams                      | 11.7 grams.                     |
| Remarks ..                      | ..               | First rate sample of its class. | ..                                 | Much fly resulted in loss in carding. | The cotton is less clean than usual and much more seedy. | ..                                | ..                                | ..                             | ..                              | ..                              |

3. *Spinning Test Details and Results* :—See Table 10, page 52.

## V.—REMARKS.

(i) *Fibre*.—Since 1930-31 this cotton has shown a fairly constant mean fibre-length, except in 1933-34 when it was rather low. Since then, with one exception the fibre-length irregularity has also been high. The fibre-weight per inch and the fibre-strength do not show much seasonal variation, though the latter is rather low in 1933-34. The fibre-strength per unit fibre-weight per inch is high in 1932-33, 1934-35 and 1935-36. The fibre-rigidity is very variable. The 1937-38 sample is slightly longer and contains rather more mature hairs than the previous year's sample, but otherwise it resembles it closely.

(ii) *Waste*.—The samples of this cotton were supplied in a very clean condition upto 1931-32, but the subsequent samples are rather wasty and gave fairly high losses both in the blow-room and the card-room.

(iii) *Breakages*.—Yarn breakages in the ring frame are fairly numerous in 6's and 8's counts of practically all seasons and exceedingly numerous in 8's counts of 1931-32 and 1932-33 and in all counts of 1933-34.

(iv) *Yarns*.—Yarns spun from this cotton vary considerably in evenness with the season, the 8's yarns ranging from even to fairly even in some seasons to fairly even to uneven in others. The 6's yarns, however, are either even or even to fairly even. They are characterised by almost complete freedom from noppiness. The best yarn strength results were obtained in 1925-26 and the poorest in 1932-33 and 1933-34.

(v) *Conclusions*.—The chief fibre-properties are fairly constant, but the minor properties fluctuate considerably with the season. The yarn strength results were fairly constant till 1930-31, but since then a decline is noticeable which is very marked indeed in the three seasons 1932-35.

|            |      |            |      |                                   |      |
|------------|------|------------|------|-----------------------------------|------|
| 1924-25 .. | 7's. | 1930-31 .. | 7's. | 1935-36 ..                        | 6's. |
| 1925-26 .. | 8's. | 1931-32 .. | 6's. | 1936-37 ..                        | 6's. |
| 1926-27 .. | 7's. | 1932-33 .. | 6's. | 1937-38 ..                        | 6's. |
| 1927-28 .. | 7's. | 1933-34 .. | 6's. | } (inferior to previous seasons). |      |
| 1928-29 .. | 7's. | 1934-35 .. | 6's. |                                   |      |
| 1929-30 .. | 7's. |            |      |                                   |      |



## 11.—C. 402 (U.P.)

|         |    |                            |
|---------|----|----------------------------|
| Seasons | .. | 1931-32 (Sample No. 1235). |
|         |    | 1932-33 (Sample No. 1612). |
|         |    | 1933-34 (Sample No. 2088). |
|         |    | 1934-35 (Sample No. 2043). |
|         |    | 1935-36 (Sample No. 3091). |
|         |    | 1936-37 (Sample No. 3476). |
|         |    | 1937-38 (Sample No. 3924). |

## I.—AGRICULTURAL DETAILS.

*Botanical Species* :—Hybrid (see "History" below).

*History* :—Obtained in 1906 from a cross between *G. arboreum* (red-flowered type) and *G. neglectum roseum* (white-flowered type). In its 10th generation in 1916 the plant was again crossed by *G. cernuum* (pale yellow-flowered type). In the season 1922-23 the cotton was styled C. 402—a yellow-flowered type.

*District of growth* :—For several years past the strain has been given out to different centres in U. P. such as Muttra, Hardoi, Cawnpore and several other places. The 1931-33 samples used in these tests are collected from a large number of cultivators in Madhoganj (District Hardoi, U.P.), but the subsequent samples are from the Government Experimental Station, Hardoi. There is, however, practically no difference in the conditions under which cotton is grown at these two places as they are in the same tract and are similar in soil and climate and are only about 15 miles apart.

*Growing period* :—Sown in the last week of May and picked from the last week of September upto the 20th of December 1937.

*Soil* :—Alluvium of the Gangetic plain; Light loam in Hardoi.

*Rainfall* :—Variable: about 30" annually; average of 1930-31 to 1935-36:—2.49" in 1936-37; 21.15" in 1937-38.

*Temperature* :—

|                  |    |    |    |    |             |             |
|------------------|----|----|----|----|-------------|-------------|
|                  |    |    |    |    | <i>Max.</i> | <i>Min.</i> |
| Sown at          | .. | .. | .. | .. | 108° F.     | 89° F.      |
| Period of growth | .. | .. | .. | .. | 95° F.      | 81° F.      |
| Picked at        | .. | .. | .. | .. | 85° F.      | 55° F.      |

*Plant Particulars (average values)* :—

- Bolls per plant: 28 (spacing 30" × 24").
- Seeds per boll: 27.
- Weight of seed: 60 milligrammes.
- Weight of lint per seed: 38 milligrammes.
- Ginning percentage: 39.

*Yield of seed-cotton* :—From 772 to 1,045 lbs. per acre. Average yield per acre 570 lbs. at the Government Experimental Farm, Hardoi; 650 lbs. in 1934-35; 749 lbs. in 1935-36; 686 lbs. per acre in 1937-38.

*Area under cultivation* :—

|       |                                             |
|-------|---------------------------------------------|
| 1,381 | acres sown at Hardoi in the season 1932-33. |
| 3,460 | " " " " " " " " 1933-34.                    |
| 2,270 | " " " " " " " " 1934-35.                    |
| 1,430 | " " " " " " " " 1935-36.                    |
| 3,846 | " in the Province in " " 1936-37.           |
| 1,987 | " " " " " " " " 1937-38.                    |

## II.—GRADER'S REPORT.

|              | 1931-32.   | 1932-33.       | 1933-34.          | 1934-35.   | 1935-36.           | 1936-37.              | 1937-38.                                             |
|--------------|------------|----------------|-------------------|------------|--------------------|-----------------------|------------------------------------------------------|
| ginned under | Broach.    | Broach.        | Bengal.           | Bengal.    | Fully Good Bengal. | Fully Good Bengal.    | Bengal F.G.                                          |
| ..           | Superfine. | Fine.          | Extra Super-fine. | Superfine. | Superfine.         | gal March. Superfine. | March. Extra Super-fine.                             |
| ..           | White.     | White.         | White.            | White.     | White.             | White.                | Bright white.                                        |
| ..           | 13/16".    | 20/32".        | 3/4".             | 11/16".    | 11/16".            | Silky. Full 5/8".     | 5/8".                                                |
| th           | Fair.      | Fair.          | Fair.             | Fair.      | Fair.              | Very good.            | Fair.                                                |
| or below     | Fair.      | Fair.          | Fair.             | Poor.      | Regular.           | Regular.              | Fair.                                                |
| ate          | Rs. 30 on. | Rs. 35 on.     | Rs. 25 on.        | Rs. 40 on. | Rs. 10 on.         | Rs. 40 on.            | Rs. 25 on.                                           |
| ation        | Rs. 210.   | Rs. 203.       | Rs. 141.          | Rs. 150.   | Rs. 143.           | Rs. 178.              | Rs. 137.                                             |
|              | 1-2-32.    | 12-1-33.       | 24-1-34.          | 11-2-35.   | 28-2-36.           | 13-2-37.              | 18-2-38.                                             |
|              |            | A nice cotton. |                   |            |                    | Sample hand-ginned.   | The sample is badly ginned and knotty, also stained. |

### III.—FIBRE PARTICULARS.

#### 1. Fibre-length distribution (Balls Sorter) :—

| Mean group-length in eighths of an inch. | Percentage. |          |          |          |          |          |
|------------------------------------------|-------------|----------|----------|----------|----------|----------|
|                                          | 1931-32.    | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. |
| 2                                        | 0.3         | 0.1      | 0.0      | 0.4      | 0.7      | 0.7      |
| 3                                        | 1.1         | 1.9      | 2.3      | 2.3      | 2.7      | 2.5      |
| 4                                        | 4.1         | 6.0      | 7.4      | 6.8      | 5.6      | 5.0      |
| 5                                        | 11.8        | 15.7     | 20.8     | 12.1     | 13.1     | 11.8     |
| 6                                        | 25.8        | 27.8     | 33.7     | 28.0     | 24.5     | 23.0     |
| 7                                        | 35.6        | 29.1     | 24.0     | 32.1     | 30.1     | 30.5     |
| 8                                        | 16.3        | 11.1     | 7.8      | 11.6     | 17.3     | 11.1     |
| 9                                        | 4.7         | 4.7      | 2.3      | 3.1      | 1.8      | 3.3      |
| 10                                       | ..          | ..       | 0.5      | 0.1      | 0.9      | 0.1      |

#### 2. Fibre-length (inch) :—

|                                                   |       |       |       |       |       |       |       |
|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| (a) By Balls Sorter .. ..                         | 0.82  | 0.80  | 0.76  | 0.80  | 0.81  | 0.82  | 0.80  |
| (b) By Baer Sorter .. ..                          | 0.78  | 0.78  | 0.75  | 0.82  | 0.81  | 0.82  | 0.81  |
| 3. Fibre-length irregularity (%) .. ..            | 13.9  | 15.0  | 11.8  | 15.5  | 17.6  | 15.6  | 13.7  |
| 4. Fibre-weight per inch (millionth of an oz.) .. | 0.201 | 0.195 | 0.181 | 0.161 | 0.181 | 0.168 | 0.199 |

#### 5. Fibre-strength (oz.) :—

|                             |       |       |       |       |       |       |       |
|-----------------------------|-------|-------|-------|-------|-------|-------|-------|
| (a) By Balls Tester .. ..   | 0.181 | 0.183 | 0.160 | 0.112 | 0.158 | 0.117 | 0.172 |
| (b) By O'Neill Tester .. .. | 0.131 | 0.188 | 0.178 | 0.112 | 0.157 | 0.157 | 0.153 |

#### 6. Fibre-strength per unit fibre-weight per inch

#### 7. Maturity Test Results (%) :—

|                       |    |    |    |    |    |    |    |
|-----------------------|----|----|----|----|----|----|----|
| (a) Mature .. ..      | .. | .. | .. | 63 | 63 | 63 | 81 |
| (b) Half-mature .. .. | .. | .. | .. | 21 | 25 | 16 | 9  |
| (c) Immature .. ..    | .. | .. | .. | 16 | 12 | 22 | 10 |

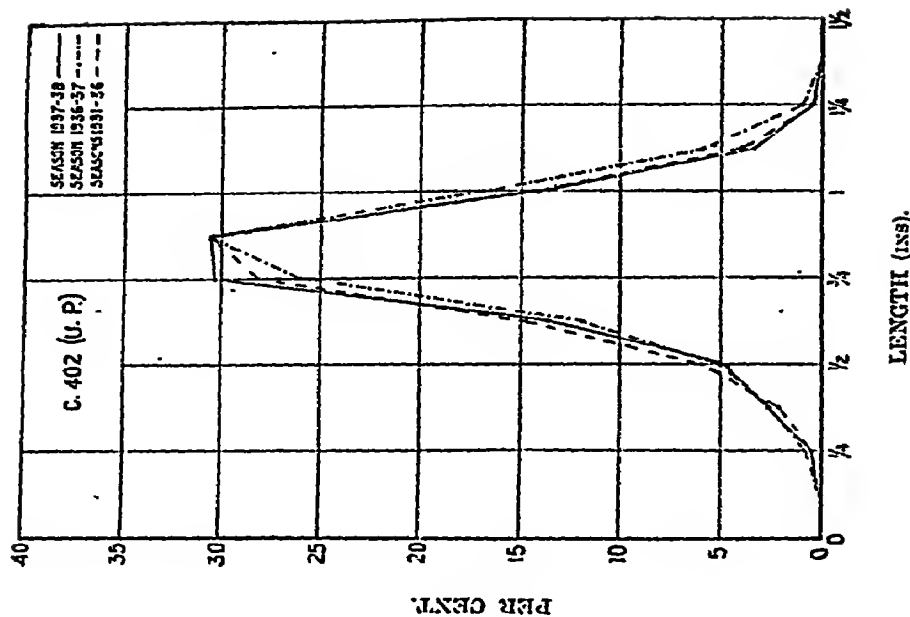


Fig. 11.—Sorter Diagrams for C. 402 (U.P.)

## IV.—SPINNING TESTS.

*Treatment :—*

(a) *Blow-room.*—Upto 1934-35 (inclusive):—Lattice feeder, Crighton (twice), Hopper, Scutcher (3 times). 1931-32 sample was passed only once through Crighton.

1935-36 onwards:—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

(b) *Card-room.*—Upto 1934-35 (inclusive):—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards:—As above but spun from single hank roving on Ring Frame No. 3, which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

*Spinning Master's Report :—*

| Season.                      | 1931-32.               | 1932-33.                      | 1933-34.                       | 1934-35.               | 1935-36.               | 1936-37.                           | 1937-38.                                |
|------------------------------|------------------------|-------------------------------|--------------------------------|------------------------|------------------------|------------------------------------|-----------------------------------------|
| Colour ..                    | White.                 | White.                        | White; bright.                 | White; bright-<br>ish. | White.                 | White.                             | White; bright.                          |
| Cleanliness ..               | Fairly clean.          | Fairly clean.                 | Fairly clean.                  | Clean.                 | Clean.                 | Fairly clean; a<br>trifle stained. | Clean; shows<br>an occasional<br>stain. |
| Feel ..                      | Slightly harsh.        | Good and slight-<br>ly rough. | Good smooth.                   | Good.                  | Good.                  | Good.                              | Fairly good.                            |
| Spinning and<br>neppiness .. | Well-ginned.           | Well-ginned.                  | Well-ginned.                   | Well-ginned.           | Well-ginned.           | Well-ginned.                       | Little knotted.                         |
| Yarns ..                     | ..                     | ..                            | ..                             | ..                     | ..                     | ..                                 | ..                                      |
| Sliver ..                    | Clean.                 | Clean.                        | Clean.                         | Clean.                 | Clean.                 | Good and clean.                    | Clean.                                  |
| Web ..                       | Even and nep-<br>free. | Even and nep-<br>free.        | Even and nep-<br>free.         | Good.                  | Even and nep-<br>free. | Good and nep-<br>free.             | Good and nep-<br>free.                  |
| Weight of 10<br>strips ..    | 10.9 grams.            | 15.3 grams.                   | 10.3 grams.                    | 21.6 grams.            | 14.2 grams.            | 15.1 grams.                        | 16.4 grams.                             |
| Remarks ..                   | ..                     | ..                            | A good sample<br>of its class. | ..                     | ..                     | ..                                 | ..                                      |

3. *Spinning Test Details and Results :—*See Table 11, page 56.

## V.—REMARKS.

(i) *Fibre.*—Except in 1933-34 when it suffered a decline in staple length, this cotton has maintained a mean fibre-length of about 0.80". The fibre-length irregularity shows a decline since 1935-36. The fibre-weight per inch is unusually low in 1934-35 and again in 1936-37. The fibre-strength was high in the first two seasons but has fallen to a lower level since then, the 1937-38 sample recording the lowest value of fibre-strength per unit of weight per inch. The 1937-38 sample has practically the same mean fibre-length as its predecessor, but is 18 per cent. coarser though it possesses an appreciably higher percentage of mature fibres.

(ii) *Waste.*—This cotton gives a blow-room loss of 7-8 per cent., but its card-room loss is rather on the high side.

(iii) *Breakages.*—Yarn breakages in the ring frame are fairly numerous or numerous practically all counts in the previous seasons, but in 1934-35 and 1935-36 they are comparatively few.

(iv) *Yarns.*—This cotton generally gives even 16's and even to fairly even 20's. Its yarns are slightly neppy. It gave very good performance in 1934-35 and again in 1936-37. From its yarn strength results, this cotton is adjudged suitable for spinning upto the following highest standard warp counts :—

|            |       |
|------------|-------|
| 1931-32 .. | 15's. |
| 1932-33 .. | 14's. |
| 1933-34 .. | 18's. |
| 1934-35 .. | 22's. |
| 1935-36 .. | 16's. |
| 1936-37 .. | 23's. |
| 1937-38 .. | 19's. |

10,200 r.p.m. 20sB... 3/0 20s... 3/0 24s... 4/0 9,400 r.p.m. 20s... 3/0 24s... 4/0  
 1.48 3.02; 4.00; (2 Hanks).

| Sample No. | Season. | Date of Spinning. | Counts Nominal. | WASTE PERCENTAGES. |                 |                |             | RING FRAME PARTICULARS*                   |                             |        |                 | YARN TEST RESULTS. |                 |                   |                         |                |                             |                   |                     |         |                 | TEMPERATURE (°F.). | RELATIVE HUMIDITY (%). |                      |                |               |                |                             |                 |                |                        |
|------------|---------|-------------------|-----------------|--------------------|-----------------|----------------|-------------|-------------------------------------------|-----------------------------|--------|-----------------|--------------------|-----------------|-------------------|-------------------------|----------------|-----------------------------|-------------------|---------------------|---------|-----------------|--------------------|------------------------|----------------------|----------------|---------------|----------------|-----------------------------|-----------------|----------------|------------------------|
|            |         |                   |                 | Blow Room Loss.    | Card Room Loss. | Spinning Loss. | Total Loss. | Yarn Breakages per 100 spindles per hour. | Front Roller Speed R. P. M. | Draft. | Turns per inch. | LEA.               |                 |                   | BALISTO.                |                |                             |                   | SINGLE THREAD.      |         |                 |                    |                        |                      | Spinning Room. | Testing Room. |                |                             |                 |                |                        |
|            |         |                   |                 |                    |                 |                |             |                                           |                             |        |                 | Counts Actual.     | Strength (lbs.) | Irregularity (%). | Count/Strength Product. | Counts Actual. | Work of Rupture (inch-lbs.) | Irregularity (%). | Count/Work Product. | Counts. | Strength (ozs.) |                    | Irregularity (%).      | Weakness Percentage. |                |               | Extension (%). | Extension Irregularity (%). | Avenness Class. | Neps per yard. | Turns per inch Actual. |
|            |         |                   |                 |                    |                 |                |             |                                           |                             |        |                 |                    |                 |                   |                         |                |                             |                   |                     |         |                 |                    |                        |                      |                |               |                |                             |                 |                |                        |
| 1612       | 1932-33 | 10-1-33           | 14              | ..                 | ..              | ..             | 50          | 202                                       | 5.38                        | 14.98  | 14.4            | 91.2               | 7.4             | 1,313             | 14.0                    | 180.2          | 4.8                         | 2,623             | 14.0                | 13.8    | 12.0            | 4.2                | 7.0                    | 7.6                  | 3              | 1.0           | 14.0           | 81                          | 70              | 70             |                        |
| 2068       | 1933-34 | 11-1-34           | 14              | ..                 | ..              | ..             | 76          | 204                                       | 5.21                        | 14.98  | 14.2            | 102.9              | 5.8             | 1,401             | 14.1                    | 173.7          | 4.2                         | 2,449             | 14.4                | 14.8    | 10.2            | 2.0                | 6.8                    | 10.0                 | 4              | 0.0           | 14.5           | 70                          | 64              | 71             |                        |
| 2943       | 1934-35 | 1-2-35            | 14              | ..                 | ..              | ..             | 11          | 206                                       | 4.64                        | 14.98  | 14.3            | 117.5              | 4.9             | 1,646             | 14.0                    | 201.4          | 3.4                         | 2,620             | 14.4                | 16.2    | 8.0             | 1.0                | 7.7                    | 7.2                  | 3              | 1.4           | 14.5           | 80                          | 65              | 68             |                        |
| 3061       | 1935-36 | 21-2-36           | 14              | ..                 | ..              | ..             | 18          | 203                                       | 5.35                        | 14.98  | 14.0            | 101.4              | 5.8             | 1,420             | 13.9                    | 184.4          | 4.8                         | 2,563             | 14.0                | 15.2    | 10.4            | 1.5                | 7.2                    | 8.6                  | 3              | 1.0           | 14.3           | 80                          | 66              | 68             |                        |
| 1235       | 1931-32 | 20-1-32           | 10              | 5.3                | 8.4             | 0.6            | 13.5        | 30                                        | 6.07                        | 15.07  | 15.8            | 76.2               | 0.5             | 1,294             | 15.0                    | 140.2          | 4.0                         | 2,220             | 16.6                | 11.7    | 11.5            | 6.0                | 7.2                    | 12.1                 | 3              | 1.2           | 15.5           | 79                          | 64              | 70             |                        |
| 1612       | 1932-33 | 10-1-33           | 16              | 5.4                | 8.6             | 0.4            | 14.2        | 38                                        | 6.10                        | 15.07  | 16.2            | 74.4               | 0.2             | 1,206             | 15.0                    | 140.2          | 4.0                         | 2,220             | 15.9                | 12.7    | 12.0            | 3.8                | 7.4                    | 7.1                  | 4              | 1.0           | 15.4           | 80                          | 69              | 72             |                        |
| 2068       | 1933-31 | 11-1-34           | 10              | 7.8                | 9.0             | 0.5            | 17.4        | 24                                        | 5.88                        | 15.07  | 16.1            | 86.1               | 6.0             | 1,380             | 16.0                    | 137.6          | 3.8                         | 2,202             | 16.0                | 12.4    | 13.4            | 0.5                | 0.2                    | 11.4                 | 4              | 1.0           | 15.4           | 79                          | 65              | 70             |                        |
| 2643       | 1934-35 | 31-1-35           | 16              | 7.5                | 11.6            | 0.4            | 18.5        | 9                                         | 5.55                        | 15.07  | 16.4            | 102.5              | 5.2             | 1,081             | 16.0                    | 163.0          | 3.0                         | 2,608             | 16.6                | 14.0    | 11.4            | 1.8                | 7.2                    | 7.7                  | 3              | 1.8           | 15.3           | 80                          | 66              | 68             |                        |
| 3091       | 1935-36 | 24-2-36           | 16              | 6.6                | 8.4             | 0.2            | 14.9        | 3                                         | 6.15                        | 15.07  | 16.2            | 77.0               | 8.2             | 1,257             | 16.2                    | 137.2          | 4.3                         | 2,223             | 16.2                | 12.7    | 11.0            | 2.8                | 6.0                    | 9.8                  | 4              | 0.8           | 15.2           | 81                          | 67              | 68             |                        |
| 3476       | 1936-37 | 8-2-37            | 16              | 6.8                | 8.2             | 0.4            | 14.8        | 3                                         | 5.66                        | 15.07  | 16.2            | 103.2              | 3.7             | 1,072             | 16.0                    | 162.5          | 4.8                         | 2,564             | 16.2                | 14.3    | 11.0            | 2.2                | 6.8                    | 8.5                  | 3              | 2.0           | 15.2           | 80                          | 64              | 68             |                        |
| 3924/1     | 1937-38 | 4-2-38            | 16              | 7.8                | 9.1             | 0.5            | 16.2        | 6                                         | 5.41                        | 15.07  | 16.3            | 100.0              | 8.0             | 1,407             | 16.0                    | 147.4          | 3.0                         | 2,447             | 17.1                | 12.0    | 11.9            | 4.5                | 6.8                    | 6.0                  | 3              | 1.0           | 15.4           | 80                          | 68              | 72             |                        |
| 3924/2     | 1937-38 | 4-2-38            | 16              | 7.8                | 9.8             | 0.6            | 17.3        | 0                                         | 5.51                        | 15.07  | 16.1            | 100.4              | 5.6             | 1,610             | 16.4                    | 161.6          | 4.2                         | 2,650             | 16.2                | 13.5    | 7.5             | 2.0                | 7.8                    | 8.4                  | 3              | 1.5           | 15.5           | 81                          | 67              | 71             |                        |
| 1235       | 1931-32 | 28-1-32           | 20A             | ..                 | ..              | ..             | 104         | 184                                       | 5.83                        | 17.98  | 19.5            | 57.1               | 7.1             | 1,113             | 19.8                    | 107.0          | 3.2                         | 2,119             | 20.1                | 9.7     | 12.7            | 5.0                | 6.8                    | 10.5                 | 4              | 2.0           | 17.3           | 81                          | 67              | 70             |                        |
| 1612       | 1932-33 | 16-1-33           | 20A             | ..                 | ..              | ..             | 120         | 176                                       | 6.25                        | 17.98  | 20.0            | 53.0               | 9.3             | 1,058             | 19.8                    | 107.0          | 3.2                         | 2,119             | 20.1                | 9.7     | 12.6            | 5.2                | 6.8                    | 11.0                 | 5              | 1.8           | 17.4           | 81                          | 69              | 74             |                        |
| 2068       | 1933-34 | 10-1-34           | 20A             | ..                 | ..              | ..             | 48          | 177                                       | 5.95                        | 17.98  | 20.0            | 62.4               | 7.2             | 1,248             | 19.8                    | 106.5          | 3.1                         | 2,109             | 20.2                | 9.8     | 10.9            | 3.2                | 5.0                    | 9.4                  | 5              | 1.2           | 17.4           | 82                          | 65              | 70             |                        |
| 2643       | 1934-35 | 1-2-35            | 20A             | ..                 | ..              | ..             | 12          | 182                                       | 5.87                        | 17.98  | 20.2            | 74.2               | 5.8             | 1,489             | 20.1                    | 118.5          | 3.5                         | 2,382             | 20.7                | 10.4    | 9.8             | 3.0                | 6.5                    | 8.2                  | 4              | 1.8           | 17.3           | 80                          | 66              | 68             |                        |
| 3091       | 1935-36 | 22-2-36           | 20A             | ..                 | ..              | ..             | 8           | 178                                       | 6.13                        | 17.98  | 20.0            | 53.0               | 7.8             | 1,480             | 19.8                    | 108.8          | 3.2                         | 2,174             | 20.0                | 10.0    | 13.7            | 8.5                | 6.2                    | 11.2                 | 4              | 1.1           | 17.2           | 81                          | 66              | 68             |                        |
| 3476       | 1936-37 | 6-2-37            | 20A             | ..                 | ..              | ..             | 13          | 186                                       | 5.42                        | 17.98  | 20.6            | 72.6               | 6.2             | 1,486             | 20.5                    | 113.2          | 2.4                         | 2,321             | 21.6                | 10.0    | 11.2            | 3.5                | 6.1                    | 7.6                  | 4              | 1.9           | 17.1           | 82                          | 68              | 68             |                        |
| 3924/1     | 1937-38 | 11-7-38           | 20A             | ..                 | ..              | ..             | 16          | 187                                       | 5.41                        | 17.98  | 20.4            | 71.2               | 9.0             | 1,452             | 20.3                    | 123.2          | 2.5                         | 2,501             | 21.6                | 9.8     | 11.6            | 4.5                | 6.2                    | 6.7                  | 2              | 0.8           | 17.3           | 83                          | 80              | 81             |                        |
| 3924/2     | 1937-38 | 11-7-38           | 20A             | ..                 | ..              | ..             | 31          | 188                                       | 5.63                        | 17.98  | 20.8            | 67.4               | 7.2             | 1,402             | 20.4                    | 124.4          | 3.3                         | 2,538             | 21.7                | 10.3    | 13.7            | 4.0                | 6.2                    | 7.2                  | 3              | 0.5           | 17.1           | 83                          | 79              | 81             |                        |
| 3924/1     | 1937-38 | 17-2-38           | 20D             | ..                 | ..              | ..             | 31          | 186                                       | 5.43                        | 19.26  | 20.5            | 73.2               | 9.9             | 1,501             | 20.5                    | 116.2          | 2.1                         | 2,382             | 21.6                | 10.7    | 8.7             | 1.5                | 6.3                    | 5.4                  | 4              | 0.5           | 18.0           | 79                          | 68              | 72             |                        |
| 3924/2     | 1937-38 | 18-2-38           | 20D             | ..                 | ..              | ..             | 0           | 187                                       | 5.32                        | 19.26  | 19.9            | 62.0               | 7.2             | 1,532             | 20.3                    | 119.2          | 3.3                         | 2,420             | 19.8                | 11.6    | 6.2             | 1.0                | 7.4                    | 9.4                  | 3              | 1.0           | 18.5           | 79                          | 65              | 73             |                        |
| 3476       | 1936-37 | 5-2-37            | 24              | ..                 | ..              | ..             | 36          | 161                                       | 6.22                        | 19.73  | 23.8            | 59.4               | 6.0             | 1,414             | 23.0                    | 68.2           | 2.7                         | 2,318             | 24.6                | 6.8     | 13.2            | 5.0                | 5.6                    | 6.8                  | 5              | 2.2           | 19.0           | 82                          | 66              | 68             |                        |
| 3924/1     | 1937-38 | 6-2-38            | 24              | ..                 | ..              | ..             | 23          | 175                                       | 6.47                        | 19.73  | 24.2            | 49.0               | 9.5             | 1,113             | 24.8                    | 91.2           | 2.5                         | 2,262             | 24.8                | 6.8     | 13.0            | 4.5                | 6.2                    | 7.8                  | 4              | 0.8           | 016            | 82                          | 68              | 73             |                        |
| 3924/2     | 1937-38 | 7-2-38            | 24              | ..                 | ..              | ..             | 41          | 178                                       | 6.38                        | 19.73  | 24.2            | 52.0               | 9.5             | 1,258             | 24.6                    | 95.2           | 3.3                         | 2,332             | 25.2                | 8.6     | 13.8            | 3.0                | 6.8                    | 6.9                  | 4              | 0.8           | 19.1           | 83                          | 69              | 73             |                        |

\* Diameter of ring frame front roller—1". Diameter of rings—1 1/2".

12 (a).—**VERUM 262 (NAGPUR).**

| Seasons.                   | Seasons.                   |
|----------------------------|----------------------------|
| 1926-27 (Sample No. 247).  | 1932-33 (Sample No. 1600). |
| 1927-28 (Sample No. 346).  | 1933-34 (Sample No. 2112). |
| 1928-29 (Sample No. 468).  | 1934-35 (Sample No. 2550). |
| 1929-30 (Sample No. 628).  | 1935-36 (Sample No. 3002). |
| 1930-31 (Sample No. 962).  | 1936-37 (Sample No. 3455). |
| 1931-32 (Sample No. 1242). | 1937-38 (Sample No. 3886). |

**I.—AGRICULTURAL DETAILS.**

- Botanical species** :—*Gossypium neglectum verum*.
- History** :—A pure line strain isolated by selection in 1924, and known as strain Verum 262.
- District of growth** :—Central Provinces and Berar. The particular samples used in these tests have been grown at the Government Experimental Farm, Nagpur.
- Growing Period** :—June to November.
- Soil** :—Black cotton soil.
- Rainfall** :—35-40 inches.
- Temperature** :—Maximum temperatures : June—110° F., January—85° F.
- Plant particulars (average)** :—
- Bolls per plant : 14 (spacing 18" × 9").
  - Seeds per boll : 26.
  - Weight of seed : 61 milligrammes.
  - Weight of lint per seed : 30 milligrammes.
  - Ginning percentage : 33.
- Yield of seed-cotton** :—500 lbs. per acre (average yield). 350-750 lbs. per acre according to soil and climatic conditions.
- Area under cultivation** :—

|       |                                         |
|-------|-----------------------------------------|
| About | 5,000 acres in 1928-29.                 |
| "     | 35,000 acres in 1929-30.                |
| "     | 1,50,000 acres in 1930-31 (Total area). |
| "     | 1,64,800 acres in 1931-32 ( " ).        |
| "     | 83,590 acres in 1932-33 ( " ).          |
| "     | 89,500 acres in 1933-34 ( " ).          |
| "     | 96,000 acres in 1934-35 ( " ).          |
| "     | 78,550 acres in 1935-36 ( " ).          |
| "     | 70,000 acres in 1936-37 ( " ).          |
| "     | 50,000 acres in 1937-38 ( " ).          |

**II.—GRADER'S REPORT.**

|                     | 1928-29.    | 1929-30.          | 1930-31.   | 1931-32.    | 1932-33.          | 1933-34.          | 1934-35.          | 1935-36.                 | 1936-37.                 | 1937-38.          |
|---------------------|-------------|-------------------|------------|-------------|-------------------|-------------------|-------------------|--------------------------|--------------------------|-------------------|
| valued under        | Broach.     | Berar.            | Broach.    | Broach.     | Broach.           | Broach.           | Broach.           | Broach.                  | Broach A/M               | Broach.           |
| .. ..               | Fine.       | Extra Super-fine. | Fine.      | Fine.       | Extra Super-fine. | Extra Super-fine. | Extra Super-fine. | Extra Super-fine.        | Extra Super-fine.        | Extra Super-fine. |
| .. ..               | White.      | White.            | White.     | White.      | White.            | White.            | White.            | Bright white.            | Bright white.            | White.            |
| length ..           | 15/16 inch. | 15/16 inch.       | 7/8 inch.  | 31/32 inch. | 29/32 inch.       | 7/8 inch.         | Bare 31/32 inch.  | 11/16 inch.              | 13/16 inch.              | 13/16 inch.       |
| length ..           | Good.       | Good.             | Fair.      | Good.       | Fair.             | Fair.             | Fair.             | Somewhat soft and wasty. | Very good.               | Moderate.         |
| .. ..               | Good.       | Good.             | Poor.      | Good.       | Fair.             | Fair.             | Fair.             | Somewhat irregular.      | Regular.                 | Regular.          |
| ve or below rate .. | Rs. 35 on.  | Rs. 80 on.        | Rs. 20 on. | Rs. 40 on.  | Rs. 40 on.        | Rs. 35 on.        | Rs. 60 on.        | Rs. 10 on.               | Rs. 20 on.               | Rs. 35 on.        |
| .. ..               | Rs. 355.    | Rs. 270.          | Rs. 200.   | Rs. 210.    | Rs. 203.          | Rs. 215.          | Rs. 220.          | Rs. 210.                 | Rs. 228.                 | Rs. 170.          |
| valuation ..        | 7-2-29.     | 18-12-20.         | 5-2-31.    | 20-1-32.    | 0-1-33.           | 7-2-31.           | 3-12-34.          | 0-1-36.                  | 30-1-37.                 | 27-12-37.         |
| .. ..               | ..          | ..                | ..         | ..          | ..                | ..                | ..                | ..                       | Silky; desirable cotton. | ..                |



## III.—FIBRE PARTICULARS.

## 1. Fibre-Length Distribution (Balls Sorter):—

| Mean group-length in eighths of an inch.               | Percentage. |          |          |          |          |          |          |          |          |          |
|--------------------------------------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|                                                        | 1928-29.    | 1929-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |
| 2                                                      | 0.1         | 0.4      | 0.3      | 1.0      | 0.2      | 0.9      | 1.2      | 1.7      | 0.7      | 0.8      |
| 3                                                      | 1.5         | 1.8      | 1.7      | 4.8      | 2.0      | 2.8      | 2.3      | 2.0      | 2.1      | 2.7      |
| 4                                                      | 3.5         | 3.9      | 3.9      | 11.8     | 4.0      | 6.3      | 4.7      | 5.5      | 5.4      | 5.1      |
| 5                                                      | 7.7         | 10.2     | 9.4      | 25.1     | 10.5     | 13.9     | 12.0     | 10.2     | 14.2     | 10.0     |
| 6                                                      | 19.3        | 24.1     | 25.0     | 33.7     | 23.7     | 31.7     | 24.7     | 21.0     | 30.0     | 22.7     |
| 7                                                      | 36.0        | 33.3     | 37.1     | 30.2     | 33.7     | 33.2     | 30.5     | 20.9     | 23.2     | 31.0     |
| 8                                                      | 21.0        | 10.0     | 16.4     | 14.0     | 19.2     | 0.8      | 10.0     | 21.1     | 14.7     | 18.6     |
| 9                                                      | 6.8         | 4.2      | 4.8      | 3.0      | 5.4      | 1.8      | 6.1      | 6.5      | 4.0      | 6.4      |
| 10                                                     | 1.1         | 0.2      | 0.7      | ..       | 0.7      | 0.1      | 1.0      | 1.5      | 0.7      | 2.2      |
| 11                                                     | ..          | ..       | 0.1      | ..       | ..       | 0.2      | ..       | ..       | ..       | ..       |
| 2. Fibre-Length (inch):—                               |             |          |          |          |          |          |          |          |          |          |
| (a) By Balls Sorter ..                                 | 0.86        | 0.82     | 0.83     | 0.82     | 0.83     | 0.78     | 0.82     | 0.83     | 0.80     | 0.83     |
| (b) By Bacs Sorter ..                                  | 0.83        | 0.80     | 0.82     | 0.84     | 0.82     | 0.70     | 0.84     | 0.82     | 0.80     | 0.82     |
| 3. Fibre-Length Irregularity (%) ..                    | ..          | 12.0     | 12.0     | 15.2     | 14.7     | 15.0     | 16.1     | 18.7     | 13.5     | 10.3     |
| 4. Fibre-Weight per inch (millionth of an ounce)       | 0.205       | 0.100    | 0.180    | 0.170    | 0.180    | 0.183    | 0.183    | 0.103    | 0.182    | 0.170    |
| 5. Fibre-Strength (oz.):—                              |             |          |          |          |          |          |          |          |          |          |
| (a) By Balls Tester ..                                 | 0.192       | 0.170    | 0.193    | 0.170    | 0.181    | 0.107    | 0.180    | 0.183    | 0.142    | 0.154    |
| (b) By O'Neill Tester ..                               | 0.102*      | 0.181    | 0.100    | 0.108    | 0.174    | 0.100    | 0.202    | 0.189    | 0.158    | 0.150    |
| 6. Fibre-Strength per unit fibre-weight per inch ..    | 0.92        | 1.00     | 1.05     | 1.06     | 0.90     | 0.80     | 1.04     | 0.90     | 0.82     | 0.87     |
| 7. Fibre-Rigidity (millionth of an ounce, square inch) | 0.201†      | 0.216    | 0.180    | 0.192    | 0.240    | ..       | ..       | ..       | ..       | ..       |
| 8. Ribbon-Width (thousandth of an inch)                | 0.62*       | 0.64     | 0.61     | 0.63     | 0.63     | ..       | ..       | ..       | ..       | ..       |
| 9. Convolution per inch ..                             | 72*         | 92       | 82       | 60       | 80       | ..       | ..       | ..       | ..       | ..       |
| 10. Maturity Test Results (%):—                        |             |          |          |          |          |          |          |          |          |          |
| (a) Mature ..                                          | ..          | ..       | ..       | ..       | ..       | ..       | 73       | 65       | 77       | 76       |
| (b) Half-mature ..                                     | ..          | ..       | ..       | ..       | ..       | ..       | 14       | 21       | 13       | 14       |
| (c) Immature ..                                        | ..          | ..       | ..       | ..       | ..       | ..       | 13       | 14       | 10       | 11       |

\* Value for 1928-29 only. † Mean for two seasons, 1927-29.

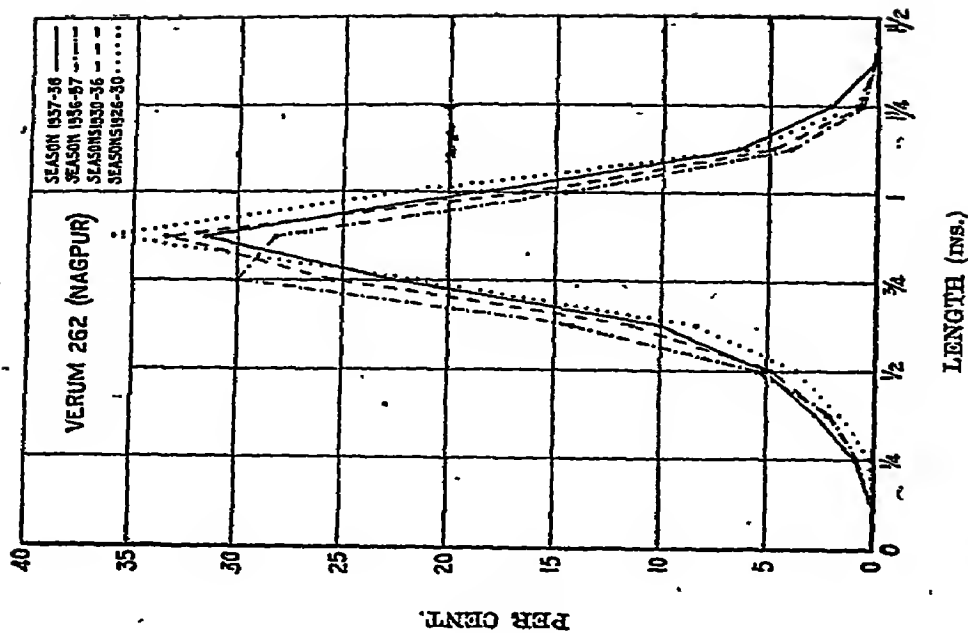


Fig. 12 (a)—Sorter Diagrams for Verum 262 (Nagpur).

## IV.—SPINNING TESTS.

*Treatment :—*

(a) *Blow-room*.—Upto 1931-32 (inclusive):—Lattice Feeder, Crighton (once only), Hopper, Scutcher (3 times).

1928-29 and 1932-35 (inclusive):—As above but two passages in the Crighton. 1935-36 onwards:—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

(b) *Card-room*.—Upto 1934-35 (inclusive):—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards:—Same as above but spun from single hank roving on Ring Frame No. 3 which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

*Spinning Master's Report.*—

| Season.                           | 1928-29.                                    | 1929-30.                          | 1930-31.          | 1931-32.                        | 1932-33.                     | 1933-34.           | 1934-35.       | 1935-36.           | 1936-37.                        | 1937-38.                  |
|-----------------------------------|---------------------------------------------|-----------------------------------|-------------------|---------------------------------|------------------------------|--------------------|----------------|--------------------|---------------------------------|---------------------------|
| <i>Cleanliness</i>                | White                                       | White; bright.                    | White; bright.    | White; bright.                  | White; very bright.          | White; bright.     | White; bright. | White; bright.     | White                           | White to creamy; bright.  |
| <i>Feel</i>                       | A little leafy; slightly stained.           | Very clean                        | Very clean        | Slightly stained; fairly clean. | Clean                        | Very clean         | Very clean     | Very clean         | Very clean.                     | Very clean.               |
| <i>Spinning and neppiness.</i>    | ..                                          | Good bodied with plenty of cling. | Good bodied.      | Good.                           | Full-bodied; slightly silky. | Smooth and bodied. | Good           | Smooth and bodied. | Good soft.                      | Good.                     |
| <i>Seeds</i>                      | ..                                          | Well-ginned.                      | Very well-ginned. | Well-ginned.                    | Well-ginned.                 | Well-ginned.       | Well-ginned.   | Well-ginned.       | Well-ginned.                    | Well-ginned.              |
|                                   | 0.82 per cent. cut and partly ginned seeds. | 0.3 per cent. full clean seeds.   | ..                | ..                              | ..                           | ..                 | ..             | ..                 | ..                              | ..                        |
| <i>Card silver</i>                | ..                                          | ..                                | ..                | Clean                           | Clean                        | Clean              | Clean          | Clean              | Clean; even.                    | Clean.                    |
| <i>Card-web</i>                   | ..                                          | ..                                | ..                | Even; nep-free.                 | Even; nep-free.              | Even; nep-free.    | Good           | Even and nep-free. | Good; even. Almost free of nep. | Good; almost free of nep. |
| <i>Weight of ten flat strips.</i> | ..                                          | ..                                | ..                | 13.4 grams                      | 11.7 grams                   | 11.4 grams         | 10.8 grams     | 11.0 grams         | 11.4 grams.                     | 12.5 grams.               |
| <i>Remarks</i>                    | ..                                          | ..                                | ..                | ..                              | ..                           | ..                 | ..             | ..                 | ..                              | ..                        |

*Spinning Test Details and Results.*—See Table 12(a) on page 60.

## V.—REMARKS.

*Fibre.*—Since 1928-29 when the mean fibre-length was high, the mean length of this cotton has remained fairly steady except in 1933-34 when it was rather low. The fibre-weight per inch is also high in 1928-29 but since then it does not show much variation. The fibre-strength shows considerable variation after 1932-33, attaining its lowest value in 1936-37. This year's sample is somewhat longer and stronger, more irregular than last year's sample, while its mean fibre-weight per inch and maturity count are practically the same.

*Waste.*—Except in 1928-29, the samples of this cotton have been received in a very clean condition and have given low waste losses in the blow-room and the card-room.

*Breakages.*—Yarn breakages in the ring frame are generally few in 20's counts, but fairly numerous in 26's and 30's counts. In 1933-34, however, they were numerous in all the three counts into which the cotton was spun.

*Yarns.*—This cotton generally gives even 20's and even to fairly even 26's, though the yarns obtained from the 1933-34 sample are rather less even than usual. Its yarns are, as a rule, very slightly neppy, but in 1928-29 and 1929-30 they were rather neppy. Their strength is below the average in 1929-30, 1932-33 and 1935-36 and above the average in 1934-35.

*Conclusions.*—The performance of this cotton remained fairly constant upto 1931-32, with the exception of 1929-30, when it gave exceptionally poor results. Since 1932-33, the variation has been more frequent, the 1935-36 sample showing a considerable falling off as compared with its predecessor. The following are the highest standard warp counts for which this cotton is adjudged suitable in the different season:—

|         |    |      |         |    |      |         |    |      |
|---------|----|------|---------|----|------|---------|----|------|
| 1926-27 | .. | 24's | 1930-31 | .. | 20's | 1934-35 | .. | 28's |
| 1927-28 | .. | 26's | 1931-32 | .. | 25's | 1935-36 | .. | 23's |
| 1928-29 | .. | 26's | 1932-33 | .. | 23's | 1936-37 | .. | 25's |
| 1929-30 | .. | 21's | 1933-34 | .. | 24's | 1937-38 | .. | 24's |

TABLE 12(a).—SPINNING TEST RESULTS FOR VERUM 262 (NAGPUR).

| HANK (1937-38).    |         |                   |                 |                 |      |      |      |      |      | TRAVELLER COUNTS.        |     |     |     |              |               |                |     |     |    | SPINDLE SPEED (1937-38). |    |             |    |    |    |    |    |                                           |    |             |    |    |    |                             |    |    |    |    |    |                 |    |    |    |    |    |                 |    |    |    |                |    |                |    |    |    |    |    |                 |    |                 |    |    |    |                  |    |    |    |    |    |                         |    |    |    |    |    |                |    |    |    |                         |    |                             |    |    |    |    |    |                  |    |                |    |    |    |                     |    |    |    |    |    |                             |    |    |    |    |    |                 |    |    |    |                  |    |                  |    |    |    |    |    |                      |    |                     |    |    |    |               |    |    |    |    |    |                  |    |    |    |    |    |               |    |    |    |                 |    |                |    |    |    |    |    |                        |    |                  |    |    |    |                |    |    |    |    |    |                       |    |    |    |    |    |    |    |    |    |               |    |    |    |    |    |    |    |    |    |                  |    |    |    |    |    |    |    |    |    |               |    |    |    |    |    |    |    |    |    |                |    |    |    |    |    |    |    |    |    |                        |    |    |    |    |    |    |    |    |    |                |    |    |    |    |    |    |    |    |    |                       |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  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| Card               | Slubber | Inter             | Rover           | 0.16            | 0.76 | 1.66 | 4.54 | 20sA | 20sB | 26s                      | 30s | 3/0 | 3/0 | 9,475 r.p.m. | 10,150 r.p.m. | 9,550 r.p.m.   | 20A | 20B | 26 | 30                       | 20 | 25          | 28 | 29 | 30 | 31 | 32 |                                           |    |             |    |    |    |                             |    |    |    |    |    |                 |    |    |    |    |    |                 |    |    |    |                |    |                |    |    |    |    |    |                 |    |                 |    |    |    |                  |    |    |    |    |    |                         |    |    |    |    |    |                |    |    |    |                         |    |                             |    |    |    |    |    |                  |    |                |    |    |    |                     |    |    |    |    |    |                             |    |    |    |    |  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| 1                  | 2       | 3                 | 4               | 5               | 6    | 7    | 8    | 9    | 10   | 11                       | 12  | 13  | 14  | 15           | 16            | 17             | 18  | 19  | 20 | 21                       | 22 | 23          | 24 | 25 | 26 | 27 | 28 | 29                                        | 30 | 31          | 32 |    |    |                             |    |    |    |    |    |                 |    |    |    |    |    |                 |    |    |    |                |    |                |    |    |    |    |    |                 |    |                 |    |    |    |                  |    |    |    |    |    |                         |    |    |    |    |    |                |    |    |    |                         |    |                             |    |    |    |    |    |                  |    |                |    |    |    |                     |    |    |    |    |    |                             |    |    |    |    |  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| WASTE PERCENTAGES. |         |                   |                 |                 |      |      |      |      |      | RING FRAME PARTICULARS.* |     |     |     |              |               |                |     |     |    | YARN TEST RESULTS.       |    |             |    |    |    |    |    |                                           |    |             |    |    |    |                             |    |    |    |    |    |                 |    |    |    |    |    |                 |    |    |    |                |    |                |    |    |    |    |    |                 |    |                 |    |    |    |                  |    |    |    |    |    |                         |    |    |    |    |    |                |    |    |    |                         |    |                             |    |    |    |    |    |                  |    |                |    |    |    |                     |    |    |    |    |    |                             |    |    |    |    |  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| Blow Room Loss.    |         |                   |                 |                 |      |      |      |      |      | Card Room Loss.          |     |     |     |              |               |                |     |     |    | Spinning Loss.           |    |             |    |    |    |    |    |                                           |    | Total Loss. |    |    |    |                             |    |    |    |    |    | Turns per Inch. |    |    |    |    |    |                 |    |    |    | Counts Actual. |    |                |    |    |    |    |    |                 |    | Strength (lbs.) |    |    |    |                  |    |    |    |    |    | Irregularity (%)        |    |    |    |    |    |                |    |    |    | Count-Strength Product. |    |                             |    |    |    |    |    |                  |    | Counts Actual. |    |    |    |                     |    |    |    |    |    | Work of Rupture (luch—lbs.) |    |    |    |    |    |                 |    |    |    | Irregularity (%) |    |                  |    |    |    |    |    |                      |    | Count-Work Product. |    |    |    |               |    |    |    |    |    | Counts Actual.   |    |    |    |    |    |               |    |    |    | Strength (ozs.) |    |                |    |    |    |    |    |                        |    | Irregularity (%) |    |    |    |                |    |    |    |    |    | Weakness Percentage.  |    |    |    |    |    |    |    |    |    | Extension (%) |    |    |    |    |    |    |    |    |    | Irregularity (%) |    |    |    |    |    |    |    |    |    | Twines Class. |    |    |    |    |    |    |    |    |    | Maps per yard. |    |    |    |    |    |    |    |    |    | Turns per Inch Actual. |    |    |    |    |    |    |    |    |    | Spinning Room. |    |    |    |    |    |    |    |    |    | Relative Humidity (%) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   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| Sample No.         | Season. | Date of Spinning. | Counts Nominal. | Blow Room Loss. |      |      |      |      |      | Card Room Loss.          |     |     |     |              |               | Spinning Loss. |     |     |    |                          |    | Total Loss. |    |    |    |    |    | Yarn Breakages per 100 spindles per hour. |    |             |    |    |    | Front Roller Speed R. P. M. |    |    |    |    |    | Draft.          |    |    |    |    |    | Turns per Inch. |    |    |    |                |    | Counts Actual. |    |    |    |    |    | Strength (lbs.) |    |                 |    |    |    | Irregularity (%) |    |    |    |    |    | Count-Strength Product. |    |    |    |    |    | Counts Actual. |    |    |    |                         |    | Work of Rupture (luch—lbs.) |    |    |    |    |    | Irregularity (%) |    |                |    |    |    | Count-Work Product. |    |    |    |    |    | Counts Actual.              |    |    |    |    |    | Strength (ozs.) |    |    |    |                  |    | Irregularity (%) |    |    |    |    |    | Weakness Percentage. |    |                     |    |    |    | Extension (%) |    |    |    |    |    | Irregularity (%) |    |    |    |    |    | Twines Class. |    |    |    |                 |    | Maps per yard. |    |    |    |    |    | Turns per Inch Actual. |    |                  |    |    |    | Spinning Room. |    |    |    |    |    | Relative Humidity (%) |    |    |    |    |    |    |    |    |    |               |    |    |    |    |    |    |    |    |    |                  |    |    |    |    |    |    |    |    |    |               |    |    |    |    |    |    |    |    |    |                |    |    |    |    |    |    |    |    |    |                        |    |    |    |    |    |    |    |    |    |                |    |    |    |    |    |    |    |    |    |                       |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    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|    |    |    |    |    |    |    |    |    |    |
| 405                | 1936-26 | 25-1-29           | 20A             | ..              | ..   | ..   | ..   | ..   | ..   | ..                       | ..  | ..  | ..  | ..           | ..            | ..             | ..  | ..  | .. | ..                       | .. | ..          | .. | .. | .. | .. | .. | ..                                        | .. | ..          | .. | .. | .. | ..                          | .. | .. | .. | .. | .. | ..              | .. | .. | .. | .. | .. | ..              | .. | .. | .. | ..             | .. | ..             | .. | .. | .. | .. | .. | ..              | .. | ..              | .. | .. | .. | ..               | .. | .. | .. | .. | .. | ..                      | .. | .. | .. | .. | .. | ..             | .. | .. | .. | ..                      | .. | ..                          | .. | .. | .. | .. | .. | ..               | .. | ..             | .. | .. | .. | ..                  | .. | .. | .. | .. | .. | ..                          | .. | .. | .. | .. | .. | ..              | .. | .. | .. | ..               | .. | ..               | .. | .. | .. | .. | .. | ..                   | .. | ..                  | .. | .. | .. | ..            | .. | .. | .. | .. | .. | ..               | .. | .. | .. | .. | .. | ..            | .. | .. | .. | ..              | .. | ..             | .. | .. | .. | .. | .. | ..                     | .. | ..               | .. | .. | .. | ..             | .. | .. | .. | .. | .. | ..                    | .. | .. | .. | .. | .. | .. | .. | .. | .. | ..            | .. | .. | .. | .. | .. | .. | .. | .. | .. | ..               | .. | .. | .. | .. | .. | .. | .. | .. | .. | ..            | .. | .. | .. | .. | .. | .. | .. | .. | .. | ..             | .. | .. | .. | .. | .. | .. | .. | .. | .. | ..                     | .. | .. | .. | .. | .. | .. | .. | .. | .. | ..             | .. | .. | .. | .. | .. | .. | .. | .. | .. | ..                    | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 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\* Diameter of ring frame front roller: 1". Diameter of ring: 1 1/2".

### Seasons.

1933-34 (Sample No. 2094).  
1934-35 (Sample No. 2559).  
1935-36 (Sample No. 2088).  
1936-37 (Sample No. 3417).  
1937-38 (Sample No. 3043).

## I.—AGRICULTURAL DETAILS.

|       |       |                                        |     |
|-------|-------|----------------------------------------|-----|
|       | About | 5,000 acres in 1928-29.                |     |
| : : : | „     | 35,000 acres in 1929-30.               |     |
|       | „     | 150,000 acres in 1930-31 (Total area). |     |
|       | „     | 164,800 acres in 1931-32 (             | „ ) |
|       | „     | 83,500 acres in 1932-33 (              | „ ) |
|       | „     | 89,560 acres in 1933-34 (              | „ ) |
|       | „     | 96,000 acres in 1934-35 (              | „ ) |
| : :   | „     | 78,550 acres in 1935-36 (              | „ ) |
|       | „     | 70,000 acres in 1936-37 (              | „ ) |
|       | „     | 50,000 acres in 1937-38 (              | „ ) |
| : : : |       | :                                      |     |

## II—GRADER'S REPORT.

[illegible]

### III.—FIBRE PARTICULARS.

#### 1. Fibre-Length Distribution (Balls Sorter):—

| Mean group-length in eighths of an inch. | Percentage. |          |          |          |          |          |          |          |          |          |
|------------------------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|                                          | 1927-28.    | 1929-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |
| 2                                        | 2.0         | 0.3      | 2.3      | 0.9      | 0.4      | 0.8      | 1.3      | 1.4      | 1.3      | 1.0      |
| 3                                        | 3.8         | 1.6      | 2.3      | 2.0      | 1.7      | 2.8      | 2.6      | 3.2      | 2.4      | 2.1      |
| 4                                        | 3.6         | 3.6      | 4.0      | 5.4      | 3.0      | 5.1      | 6.2      | 5.8      | 6.1      | 4.5      |
| 5                                        | 8.0         | 9.3      | 13.5     | 16.2     | 10.1     | 12.8     | 11.8     | 11.7     | 15.1     | 11.6     |
| 6                                        | 22.1        | 21.0     | 30.7     | 32.4     | 23.0     | 23.0     | 23.1     | 24.3     | 23.6     | 21.0     |
| 7                                        | 39.2        | 33.8     | 31.5     | 30.0     | 35.5     | 29.1     | 29.3     | 30.5     | 28.0     | 32.4     |
| 8                                        | 18.0        | 21.1     | 13.3     | 9.9      | 17.1     | 15.7     | 11.0     | 10.8     | 13.0     | 18.7     |
| 9                                        | 4.4         | 7.5      | 3.8      | 2.6      | 4.7      | 4.8      | 3.5      | 5.2      | 3.0      | 5.2      |
| 10                                       | 1.0         | 1.8      | ..       | ..       | 0.7      | 0.0      | 0.2      | 1.1      | 1.3      | 0.5      |

#### 2. Fibre-Length (inch):—

|                                                     |      |      |      |      |      |      |      |      |      |      |
|-----------------------------------------------------|------|------|------|------|------|------|------|------|------|------|
| By Balls Sorter                                     | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   |
| By Beer Sorter                                      | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   |
| Fibre-Length Irregularity (%)                       | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   |
| Fibre-Weight per inch (millionth of an ounce)       | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   |
| Fibre-Strength (oz.) :—                             |      |      |      |      |      |      |      |      |      |      |
| (a) By Balls Tester..                               | 0.81 | 0.85 | 0.80 | 0.77 | 0.83 | 0.80 | 0.70 | 0.81 | 0.70 | 0.82 |
| (b) By O'Neill Tester                               | 0.82 | 0.83 | 0.79 | 0.78 | 0.82 | 0.80 | 0.80 | 0.80 | 0.70 | 0.82 |
| Fibre-Strength per unit fibre-weight per inch       | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   |
| Fibre-Rigidity (millionth of an ounce, square inch) | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   |
| Ribbon-Width (thousandth of an inch)                | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   |
| Convolutions per inch                               | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   |
| Maturity Test Results (%) :—                        |      |      |      |      |      |      |      |      |      |      |
| (a) Mature ..                                       | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   |
| (b) Half-mature ..                                  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   |
| (c) Immature ..                                     | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   |

\* Value for 1928-29 only.

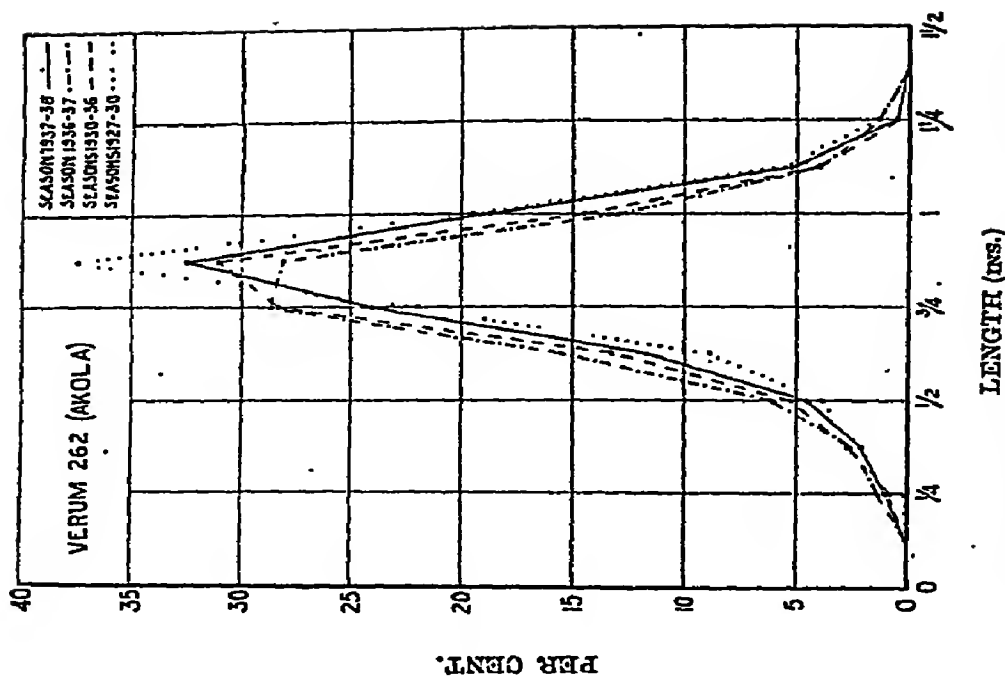


Fig 12 (b).—Sorter Diagrams for Verum 262 (Akola).

## IV.—SPINNING TESTS.

*Treatment.*—

(a) *Blow-room.*—Upto 1930-31 (inclusive).—Lattice Feeder, Crighton (once), Hopper, Scutcher (3 times). Upto 1934-35 (inclusive): as above but two passages in the Orighton. 1935-36 onwards: Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cago exhaust, Hopper feeder, Scutcher (3 times).

(b) *Card-room.*—Upto 1934-35 (inclusive):—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards:—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 3 which is fitted with tapo drive arrangement for spindles while Ring Frame No. 1 possesses a band drive arrangement.

*Spinning Master's Report.*—

| Season.                     | 1928-29.                       | 1929-30.                              | 1930-31.                                       | 1931-32.               | 1932-33.        | 1933-34.           | 1934-35.           | 1935-36.       | 1936-37.           | 1937-38.                                 |
|-----------------------------|--------------------------------|---------------------------------------|------------------------------------------------|------------------------|-----------------|--------------------|--------------------|----------------|--------------------|------------------------------------------|
| Colour ..                   | White to creamy-white; bright. | White to creamy-white; fairly bright. | White to creamy-white; bright.                 | White; bright.         | White; bright.  | White; bright.     | White; bright.     | White; bright. | White; bright.     | White with slight tinge of creamy-white. |
| Cleanliness ..              | Clean ..                       | Clean ..                              | Clean ..                                       | Fairly clean           | Clean ..        | Fairly clean       | Clean ..           | Clean ..       | Clean ..           | A trifle leafy.                          |
| Feel ..                     | Slightly silky and bodied.     | Good ..                               | Good ..                                        | Good ..                | Very good       | Smooth and bodied. | Smooth and bodied. | Good bodied.   | Good bodied.       | Good soft feel.                          |
| Spinning and neppiness ..   | Well-ginned.                   | Well-ginned ..                        | Well-ginned ..                                 | Well-ginned            | Well-ginned     | Well-ginned        | Well-ginned        | Well-ginned    | Very well-ginned.  | Well-ginned.                             |
| Nepps ..                    | ..                             | 0.04 per cent. full clean.            | ..                                             | ..                     | ..              | ..                 | ..                 | ..             | ..                 | ..                                       |
| Card sliver ..              | ..                             | ..                                    | Clean ..                                       | Clean ..               | Clean ..        | Clean ..           | Clean ..           | Clean ..       | Clean ..           | Clean ..                                 |
| Card-web ..                 | ..                             | ..                                    | Even and clear                                 | Almost nep-free; even. | Even; nep-free. | Even; nep-free.    | Good ..            | Good ..        | Even and nep-free. | Fairly neppy.                            |
| Weight of 10 flat strips .. | ..                             | ..                                    | 14.0 grams.                                    | 13.1 grams.            | 12.9 grams.     | 12.0 grams.        | 13.3 grams.        | 10.7 grams.    | 11.1 grams.        | 15.4 grams.                              |
| Remarks ..                  | ..                             | Staple somewhat irregular.            | Front roller speed 5% too high for 20sA and B. | ..                     | ..              | ..                 | ..                 | ..             | ..                 | Shows an occasional stain.               |

5. *Spinning Test Details and Results.*—See Table 12 (b) on page 64.

## V.—REMARKS.

(i) *Fibre.*—The mean fibre-length showed considerable fluctuation between 1929-30 and 1932-33, but since then has been fairly constant. The fibre-length irregularity increased steadily upto 1935-36, but shows a decline in the two subsequent seasons. The fibre-weight per inch is fairly constant since 1929-30, except in the two seasons 1935-37 when it is rather high. The fibre-strength is also fairly constant since 1929-30, except in 1932-33 and 1937-38 when it is unusually low. The 1937-38 sample is somewhat longer but less regular in length than its predecessor. Its fibre-weight per inch and fibre-strength are respectively 20% and 24% less than its predecessor, while its intrinsic strength is the lowest on record. It, however, contains a somewhat higher percentage of mature hairs.

(ii) *Waste.*—Samples of this cotton have generally been picked in a fairly clean condition but the current season's sample is an exception.

(iii) *Breakages.*—This cotton gave fairly numerous yarn breakages in the ring frame in 20's and 26's counts; especially since 1930-31, the notable exception being the 1935-36 sample, which gave few breakages in all the counts into which it was spun.

(iv) *Yarns.*—This cotton usually gives even 20'sA and even to fairly even 26's, but in 1930-31, 1933-34 and 1934-35 its yarns were rather less even than usual. The yarns are generally either free from neps or only slightly neppy, but in 1928-29, 1930-31 and 1937-38 they were rather neppy.

(v) *Conclusions.*—This cotton shows a fair amount of seasonal variation in its spinning performance. The 1932-33 sample gave the best results while the 1930-31 sample gave the worst performance. The following are the highest standard warp counts for which the cotton is adjudged suitable in the different seasons:—

|            |      |            |      |            |      |
|------------|------|------------|------|------------|------|
| 1927-28 .. | 10's | 1931-32 .. | 21's | 1935-36 .. | 20's |
| 1928-29 .. | 23's | 1932-33 .. | 25's | 1936-37 .. | 23's |
| 1929-30 .. | 21's | 1933-34 .. | 21's | 1937-38 .. | 24's |
| 1930-31 .. | 18's | 1934-35 .. | 22's |            |      |

| Sample No. | Season. | Date of Spinning. | Counts Nominal. | WASTE PERCENTAGES. |                 |                | RING FRAME PARTICULARS.* |                                        |                           |        | YARN TEST RESULTS. |                |                 |                   |                |                |                            |                        |                 |         | TEMPERATURE.    |                   | RELATIVE HUMIDITY (%). |                |               |                      |                |                   |                 |                 |                        |
|------------|---------|-------------------|-----------------|--------------------|-----------------|----------------|--------------------------|----------------------------------------|---------------------------|--------|--------------------|----------------|-----------------|-------------------|----------------|----------------|----------------------------|------------------------|-----------------|---------|-----------------|-------------------|------------------------|----------------|---------------|----------------------|----------------|-------------------|-----------------|-----------------|------------------------|
|            |         |                   |                 | Blow Room Loss.    | Card Room Loss. | Spinning Loss. | Total Loss.              | Yarn Breaks per 100 spindles per hour. | Front Roller Speed R.P.M. | Draft. | Turns per Inch.    | LEA.           |                 |                   | BALISTIC.      |                |                            | SINGLE THREAD.         |                 |         |                 |                   |                        | Spinning Room. | Testing Room. |                      |                |                   |                 |                 |                        |
|            |         |                   |                 |                    |                 |                |                          |                                        |                           |        |                    | Counts Actual. | Strength (lbs.) | Irregularity (%). | Count-Product. | Counts Actual. | Work of Rupture (inch-lb.) | Work Irregularity (%). | Count-Work (%). | Counts. | Strength (ozs.) | Irregularity (%). |                        |                |               | Weakness Percentage. | Extension (%). | Irregularity (%). | Evenness Class. | Neeps per yard. | Turns per Inch Actual. |
|            |         |                   |                 |                    |                 |                |                          |                                        |                           |        |                    |                |                 |                   |                |                |                            |                        |                 |         |                 |                   |                        |                |               |                      |                |                   |                 |                 |                        |
| 435        | 1928-29 | 8-11-28           | 20A             | 4.4                | 7.3             | 0.3            | 11.7                     | 40                                     | 105                       | 4.70   | 16.85              | 20.0           | 60.7            | 8.5               | 1214           | 20.0           | 110.8                      | 4.4                    | 2330            | 20.4    | 10.0            | 13.2              | 6.5                    | 6.0            | 7.4           | 3                    | 3.3            | 10.4              | 82              | 71              |                        |
| 618        | 1929-30 | 7-11-29           | "               | 6.4                | 6.6             | 0.2            | 12.7                     | 25                                     | 160                       | 5.23   | 16.85              | 19.6           | 55.4            | 8.1               | 1180           | 19.7           | 117.5                      | 3.8                    | 2327            | 20.8    | 9.6             | 13.4              | 5.5                    | 6.5            | 10.1          | 3                    | 1.1            | 10.2              | 85              | 65              |                        |
| 608        | 1930-31 | 14-11-30          | "               | 4.4                | 7.7             | 0.6            | 12.4                     | 78                                     | 185                       | 5.20   | 16.85              | 19.6           | 55.4            | 9.2               | 1080           | 19.8           | 117.5                      | 3.8                    | 2327            | 20.8    | 8.9             | 15.2              | 8.8                    | 6.8            | 7.7           | 3                    | 2.6            | 10.0              | 83              | 66              |                        |
| 1504       | 1932-33 | 22-12-32          | "               | 4.0                | 7.7             | 0.4            | 12.0                     | 30                                     | 105                       | 5.90   | 16.85              | 20.0           | 72.2            | 7.2               | 1444           | 20.2           | 133.2                      | 3.5                    | 2390            | 20.2    | 10.9            | 15.4              | 7.8                    | 7.2            | 8.0           | 3                    | 1.0            | 10.0              | 80              | 68              |                        |
| 2094       | 1933-34 | 10-1-34           | "               | 5.2                | 7.7             | 0.4            | 13.0                     | 44                                     | 184                       | 5.38   | 16.85              | 19.5           | 65.0            | 7.4               | 1268           | 19.6           | 127.8                      | 3.4                    | 2305            | 10.6    | 9.6             | 14.6              | 8.8                    | 6.4            | 11.8          | 4                    | 1.6            | 16.2              | 78              | 70              |                        |
| 2550       | 1934-35 | 7-12-34           | "               | 5.0                | 8.1             | 0.4            | 13.0                     | 60                                     | 190                       | 5.00   | 16.85              | 20.0           | 62.0            | 7.0               | 1258           | 20.0           | 125.8                      | 3.0                    | 2310            | 20.7    | 9.9             | 12.7              | 5.5                    | 7.0            | 9.1           | 4                    | 1.5            | 16.2              | 82              | 73              |                        |
| 2088       | 1935-36 | 17-12-35          | "               | 5.9                | 8.2             | 0.2            | 13.9                     | 20                                     | 170                       | 4.01   | 16.85              | 19.7           | 55.0            | 9.0               | 1101           | 19.4           | 128.4                      | 4.2                    | 2481            | 10.8    | 9.6             | 14.1              | 7.0                    | 6.9            | 7.3           | 3                    | 1.0            | 10.1              | 81              | 69              |                        |
| 3417       | 1936-37 | 10-11-36          | "               | 3.4                | 8.0             | 0.2            | 11.4                     | 18                                     | 178                       | 4.82   | 16.85              | 19.2           | 73.4            | 6.7               | 1400           | 19.2           | 154.8                      | 3.2                    | 2072            | 10.0    | 11.4            | 13.2              | 5.0                    | 7.8            | 7.6           | 3                    | 1.5            | 10.1              | 85              | 76              |                        |
| 3043/1     | 1937-38 | 14-2-38           | "               | 9.3                | 9.2             | 0.4            | 17.9                     | 10                                     | 207                       | 4.60   | 16.85              | 20.4           | 64.1            | 5.4               | 1308           | 20.3           | 130.0                      | 3.0                    | 2039            | 20.7    | 10.1            | 12.8              | 3.5                    | 6.8            | 6.5           | 3                    | 2.2            | 10.3              | 81              | 67              |                        |
| 3043/2     | 1937-38 | 16-2-38           | "               | 8.5                | 8.5             | 0.4            | 16.0                     | 47                                     | 206                       | 4.60   | 16.85              | 20.2           | 60.1            | 8.5               | 1335           | 20.3           | 130.0                      | 3.4                    | 2039            | 20.3    | 11.0            | 11.2              | 5.0                    | 7.1            | 8.0           | 3                    | 2.0            | 10.1              | 80              | 67              |                        |
| 435        | 1928-29 | 8-11-28           | 20B             | "                  | "               | "              | "                        | 7                                      | 100                       | 4.70   | 17.08              | 10.6           | 78.2            | 7.0               | 1404           | 20.2           | 126.0                      | 3.0                    | 2430            | 19.7    | 11.4            | 11.8              | 5.5                    | 7.0            | 6.9           | 3                    | 3.6            | 17.3              | 84              | 72              |                        |
| 618        | 1929-30 | 7-11-29           | "               | "                  | "               | "              | "                        | 16                                     | 192                       | 5.10   | 17.08              | 20.0           | 60.9            | 8.0               | 1388           | 20.2           | 126.0                      | 3.0                    | 2430            | 20.4    | 10.3            | 11.7              | 2.7                    | 6.8            | 8.0           | 3                    | 0.8            | 17.3              | 87              | 68              |                        |
| 608        | 1930-31 | 13-11-30          | "               | "                  | "               | "              | "                        | 42                                     | 192                       | 5.31   | 17.08              | 19.7           | 62.0            | 5.4               | 1221           | 19.9           | 120.1                      | 3.5                    | 2390            | 20.4    | 10.8            | 13.5              | 7.0                    | 7.1            | 6.8           | 4                    | 3.0            | 17.2              | 86              | 69              |                        |
| 1241       | 1931-32 | 19-1-32           | "               | "                  | "               | "              | "                        | 62                                     | 191                       | 5.21   | 17.08              | 20.1           | 69.0            | 6.4               | 1387           | 20.4           | 121.0                      | 3.2                    | 2408            | 20.6    | 0.8             | 13.8              | 8.2                    | 7.0            | 9.0           | 3                    | 1.9            | 17.3              | 81              | 65              |                        |
| 1594       | 1932-33 | 22-12-32          | "               | "                  | "               | "              | "                        | 29                                     | 195                       | 5.00   | 17.08              | 19.5           | 80.6            | 4.8               | 1797           | 19.3           | 152.4                      | 3.6                    | 2341            | 19.8    | 12.7            | 11.6              | 9.2                    | 7.7            | 7.6           | 3                    | 1.5            | 17.4              | 81              | 66              |                        |
| 2094       | 1933-34 | 18-1-34           | "               | "                  | "               | "              | "                        | 60                                     | 190                       | 5.12   | 17.08              | 19.4           | 77.3            | 6.9               | 1500           | 19.6           | 128.7                      | 3.4                    | 2523            | 19.8    | 10.2            | 12.8              | 6.5                    | 6.4            | 11.2          | 4                    | 1.3            | 17.3              | 81              | 74              |                        |
| 2559       | 1934-35 | 8-12-34           | "               | "                  | "               | "              | "                        | 44                                     | 200                       | 5.00   | 17.08              | 10.0           | 76.0            | 5.7               | 1501           | 19.9           | 129.2                      | 3.0                    | 2371            | 20.2    | 11.0            | 9.3               | 2.8                    | 7.4            | 6.7           | 4                    | 2.1            | 17.4              | 81              | 72              |                        |
| 2688       | 1935-36 | 17-12-35          | "               | "                  | "               | "              | "                        | 5                                      | 188                       | 4.01   | 17.08              | 19.7           | 71.2            | 7.0               | 1403           | 19.8           | 137.2                      | 4.0                    | 2717            | 20.3    | 10.3            | 14.2              | 7.5                    | 6.9            | 6.3           | 3                    | 0.8            | 17.2              | 81              | 71              |                        |
| 3417       | 1936-37 | 10-11-36          | "               | "                  | "               | "              | "                        | 52                                     | 191                       | 4.79   | 17.08              | 19.7           | 80.6            | 6.6               | 1688           | 19.6           | 154.9                      | 4.0                    | 3030            | 19.9    | 11.9            | 13.8              | 5.5                    | 7.8            | 7.5           | 3                    | 1.6            | 17.2              | 86              | 74              |                        |
| 3043/1     | 1937-38 | 15-2-38           | "               | "                  | "               | "              | "                        | 57                                     | 212                       | 4.00   | 17.08              | 19.9           | 70.0            | 6.4               | 1560           | 20.3           | 135.8                      | 3.2                    | 2757            | 19.8    | 11.5            | 8.6               | 1.5                    | 7.2            | 7.0           | 3                    | 2.0            | 17.2              | 86              | 67              |                        |
| 3043/2     | 1937-38 | 16-2-38           | "               | "                  | "               | "              | "                        | 31                                     | 211                       | 4.69   | 17.08              | 20.4           | 76.1            | 4.7               | 1532           | 20.4           | 135.0                      | 3.0                    | 2764            | 20.7    | 11.2            | 9.0               | 2.5                    | 7.1            | 8.4           | 3                    | 2.0            | 17.3              | 76              | 68              |                        |
| 435        | 1928-29 | 8-11-28           | 20              | "                  | "               | "              | "                        | 26                                     | 189                       | 6.13   | 20.23              | 20.2           | 47.7            | 10.4              | 1250           | 20.0           | 85.5                       | 4.7                    | 2223            | 20.8    | 7.6             | 15.7              | 8.5                    | 6.1            | 10.4          | 4                    | 4.0            | 19.4              | 85              | 72              |                        |
| 618        | 1929-30 | 7-11-29           | "               | "                  | "               | "              | "                        | 23                                     | 189                       | 6.58   | 20.23              | 20.7           | 42.3            | 10.1              | 1087           | 20.0           | 85.5                       | 3.4                    | 2223            | 20.8    | 7.7             | 14.2              | 8.0                    | 6.0            | 10.8          | 5                    | 1.1            | 19.3              | 89              | 64              |                        |
| 608        | 1930-31 | 14-11-30          | "               | "                  | "               | "              | "                        | 30                                     | 142                       | 6.72   | 20.23              | 25.4           | 37.2            | 13.0              | 945            | 25.5           | 92.6                       | 3.4                    | 2350            | 20.1    | 7.3             | 13.4              | 0.0                    | 6.0            | 6.0           | 5                    | 2.3            | 16.4              | 84              | 66              |                        |
| 1241       | 1931-32 | 20-1-32           | "               | "                  | "               | "              | "                        | 14                                     | 142                       | 6.56   | 20.23              | 25.5           | 45.9            | 9.3               | 1170           | 20.2           | 92.7                       | 3.5                    | 2420            | 25.8    | 7.0             | 18.4              | 13.8                   | 6.0            | 6.4           | 4                    | 1.6            | 19.4              | 81              | 62              |                        |
| 1594       | 1932-33 | 23-12-32          | "               | "                  | "               | "              | "                        | 38                                     | 162                       | 9.02   | 20.23              | 25.0           | 56.5            | 10.1              | 1421           | 26.8           | 101.1                      | 2.6                    | 2008            | 25.8    | 8.8             | 12.0              | 4.2                    | 7.0            | 8.7           | 4                    | 1.8            | 19.5              | 81              | 63              |                        |
| 2094       | 1933-34 | 18-1-34           | "               | "                  | "               | "              | "                        | 62                                     | 164                       | 6.65   | 20.23              | 25.2           | 40.0            | 9.7               | 1174           | 25.6           | 95.2                       | 2.7                    | 2437            | 25.9    | 6.6             | 17.8              | 10.6                   | 5.6            | 14.0          | 5                    | 1.6            | 19.6              | 80              | 65              |                        |
| 2550       | 1934-35 | 10-12-34          | "               | "                  | "               | "              | "                        | 48                                     | 102                       | 4.47   | 20.23              | 20.0           | 44.2            | 9.2               | 1140           | 26.0           | 95.2                       | 3.0                    | 2475            | 26.6    | 7.7             | 14.2              | 6.8                    | 6.6            | 12.8          | 5                    | 2.3            | 19.4              | 81              | 63              |                        |
| 2688       | 1935-36 | 16-12-35          | "               | "                  | "               | "              | "                        | 4                                      | 145                       | 6.00   | 20.23              | 20.0           | 41.9            | 13.7              | 1080           | 26.0           | 98.4                       | 2.5                    | 2558            | 26.7    | 7.2             | 14.4              | 8.5                    | 6.8            | 7.0           | 4                    | 1.2            | 19.5              | 82              | 73              |                        |
| 3417       | 1936-37 | 11-11-36          | "               | "                  | "               | "              | "                        | 20                                     | 153                       | 6.20   | 20.23              | 25.6           | 51.4            | 8.0               | 1310           | 25.4           | 106.7                      | 3.2                    | 2085            | 26.8    | 8.0             | 13.8              | 6.5                    | 7.4            | 7.5           | 4                    | 1.5            | 19.0              | 80              | 72              |                        |
| 3043/1     | 1937-38 | 16-2-38           | "               | "                  | "               | "              | "                        | 30                                     | 128                       | 5.00   | 20.23              | 20.3           | 51.4            | 6.6               | 1362           | 26.3           | 100.6                      | 3.4                    | 2467            | 27.2    | 7.9             | 13.1              | 5.5                    | 6.2            | 8.3           | 4                    | 1.5            | 16.1              | 80              | 69              |                        |
| 3043/2     | 1937-38 | 17-2-38           | "               | "                  | "               | "              | "                        | 32                                     | 188                       | 6.04   | 20.23              | 20.3           | 40.5            | 8.6               | 1302           | 26.3           | 97.6                       | 3.7                    | 2507            | 26.7    | 7.8             | 12.8              | 5.6                    | 6.6            | 6.5           | 4                    | 2.2            | 10.3              | 70              | 64              |                        |
| 3043/1     | 1937-38 | 16-2-38           | "               | "                  | "               | "              | "                        | 23                                     | 162                       | 6.83   | 21.80              | 30.1           | 43.2            | 6.7               | 1800           | 29.7           | 89.4                       | 2.2                    | 2055            | 32.4    | 6.8             | 14.6              | 10.6                   | 5.8            | 9.3           | 5                    | 2.3            | 20.8              | 81              | 61              |                        |
| 3043/2     | 1937-38 | 17-2-38           | 30              | "                  | "               | "              | "                        | 46                                     | 166                       | 6.90   | 21.80              | 30.6           | 38.6            | 7.8               | 1193           | 30.8           | 86.4                       | 4.2                    | 2461            | 31.3    | 6.4             | 16.1              | 9.0                    | 6.2            | 8.9           | 5                    | 2.6            | 20.9              | 80              | 68              |                        |

\* Diameter of ring frame front roller--11". Diameter of rings--11".

## 13.—V. 434 (AKOLA).

|            |   |                            |
|------------|---|----------------------------|
| Seasons .. | { | 1933-34 (Sample No. 2218). |
|            |   | 1934-35 (Sample No. 2560). |
|            |   | 1935-36 (Sample No. 2987). |
|            |   | 1936-37 (Sample No. 3418). |
|            |   | 1937-38 (Sample No. 3935). |

## I.—AGRICULTURAL DETAILS.

- (i) *Botanical species* :—*Gossypium neglectum Verum*.
- (ii) *History* :—A pure line strain first isolated in 1931 and known as V. 434.
- (iii) *District of growth* :—Central Provinces and Berar. The particular samples used in these tests were grown at the Government Experimental Farm, Akola.
- (iv) *Growing period* :—June to November.
- (v) *Soil* :—Black cotton soil.
- (vi) *Rainfall* :—28 inches.
- (vii) *Temperature* :—Maximum temperatures :—June—115° F., January—85° F.
- (viii) *Plant particulars (average values)* :—
- Bolls per plant : 16 to 18.
  - Seeds per boll : 26.
  - Weight of seed : 62 milligrammes.
  - Weight of lint per seed : 30 milligrammes.
  - Ginning percentage : 33.
- (ix) *Yield of seed-cotton* :—400 to 800 lbs. per acre according to soil and climatic conditions.
- (x) *Area under cultivation* :—About 120 acres in 1933-34.
- |   |        |   |          |
|---|--------|---|----------|
| „ | 1,200  | „ | 1934-35. |
| „ | 5,065  | „ | 1935-36. |
| „ | 22,000 | „ | 1936-37. |
| „ | 43,360 | „ | 1937-38. |

## II.—GRADER'S REPORT.

|                                       | 1933-34.    | 1934-35.         | 1935-36.                    | 1936-37.                      | 1937-38.                    |
|---------------------------------------|-------------|------------------|-----------------------------|-------------------------------|-----------------------------|
| Contract valued under .. . . .        | Broach.     | Broach.          | Broach A/M 1936.            | Broach.                       | Broach.                     |
| Class .. . . .                        | Superfine.  | Extra superfine. | Extra superfine.            | Extra superfine.              | Fine.                       |
| Colour .. . . .                       | White.      | White.           | Very white.                 | Very clean ;<br>bright white. | Creamy.                     |
| Staple length .. . . .                | 15/16 inch. | 15/16 inch.      | 15/16 inch.                 | 15/16 inch.                   | 7/8 inch.                   |
| Staple strength .. . . .              | Fair.       | Fair.            | Good but wasty<br>and soft. | Good.                         | Moderate.                   |
| Regularity .. . . .                   | Fair.       | Fair.            | Slightly regular.           | Regular.                      | Somewhat soft<br>and wasty. |
| Value above or below contract rate .. | Rs 55 on.   | Rs. 63 on.       | Rs. 40 on.                  | Rs. 25 on.                    | Rs. 20 on.                  |
| Basis .. . . .                        | Rs. 190.    | Rs. 220.         | Rs. 221.                    | Rs. 219.                      | Rs. 171.                    |
| Date of valuation .. . . .            | 30-4-34.    | 3-12-34.         | 21-12-35.                   | 4-12-36.                      | 11-3-38.                    |
| Remarks .. . . .                      |             |                  |                             | Very silky.                   | Silky.                      |



### III.—FIBRE PARTICULARS.

#### 1. Fibre-length Distribution (Balls Sorter) :—

| Mean Group-Length in eighths of an inch. | Percentage. |          |          |          |          |
|------------------------------------------|-------------|----------|----------|----------|----------|
|                                          | 1933-34.    | 1934-35. | 1935-36. | 1936-37. | 1937-38. |
| 2                                        | 0           | 0.4      | 0.0      | 0.4      | 0.7      |
| 3                                        | 2.1         | 1.7      | 1.8      | 1.0      | 2.1      |
| 4                                        | 3.7         | 4.3      | 4.0      | 3.2      | 3.0      |
| 5                                        | 7.8         | 10.8     | 7.0      | 7.8      | 8.1      |
| 6                                        | 17.7        | 22.2     | 10.3     | 22.1     | 19.2     |
| 7                                        | 30.3        | 31.7     | 30.3     | 35.5     | 31.2     |
| 8                                        | 25.3        | 21.5     | 20.6     | 20.0     | 24.3     |
| 9                                        | 10.4        | 0.1      | 0.0      | 5.8      | 8.3      |
| 10                                       | 2.7         | 1.3      | 2.7      | 2.4      | 2.0      |
| 11                                       | ..          | ..       | 0.2      | ..       | 0.2      |

|                                                      |    |    |    |    |    |
|------------------------------------------------------|----|----|----|----|----|
| 2. Fibre-length (inch) :—                            |    |    |    |    |    |
| (a) By Balls Sorter ..                               | .. | .. | .. | .. | .. |
| (b) By Baer Sorter ..                                | .. | .. | .. | .. | .. |
| 3. Fibre-length Irregularity (%) ..                  | .. | .. | .. | .. | .. |
| 4. Fibre-weight per inch (millimouth of an ounce) .. | .. | .. | .. | .. | .. |
| 5. Fibre-strength (oz.) :—                           |    |    |    |    |    |
| (a) By Balls Tester ..                               | .. | .. | .. | .. | .. |
| (b) By O'Neil Tester ..                              | .. | .. | .. | .. | .. |
| 6. Fibre-strength per unit fibre-weight per inch ..  | .. | .. | .. | .. | .. |
| 7. Maturity Test Results (%) :—                      |    |    |    |    |    |
| (a) Mature ..                                        | .. | .. | .. | .. | .. |
| (b) Half-mature ..                                   | .. | .. | .. | .. | .. |
| (c) Immature ..                                      | .. | .. | .. | .. | .. |

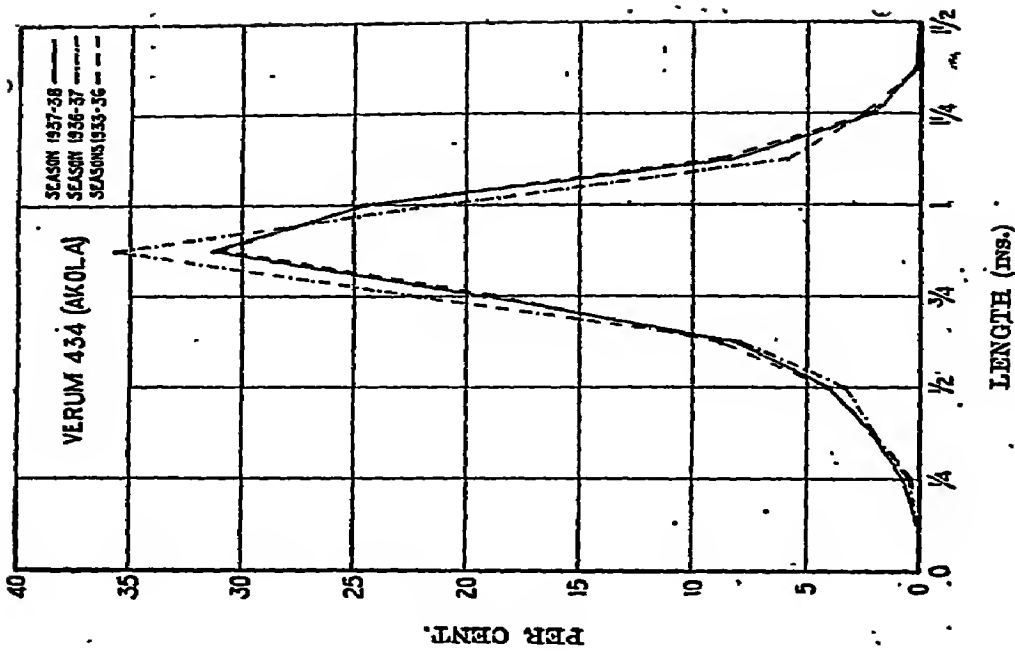


Fig. 13.—Sorter Diagrams for Verum 434 (Akola).

## IV.—SPINNING TESTS.

1. *Treatment* :—

(a) *Blow-room* :—Upto 1934-35 (inclusive) :—Lattice Feeder, Crighton (twice), Hopper, Scutcher (3 times). The 1933-34 sample was passed only once through the Crighton.

1935-36 onwards :—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

(b) *Card-room* :—Upto 1934-35 (inclusive) : Card, Drawing (2 heads), Slubber, Inter, Rover, spun from single hank roving on Ring Frame No. 1.

1935-36 onwards :—Card, Drawing (2 heads), Slubber, Inter, Rover, spun from single hank roving on Ring Frame No. 3 which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

2. *Spinning Master's Report* :—

|                                | 1933-34.       | 1934-35.       | 1935-36.            | 1936-37.                  | 1937-38.                                 |
|--------------------------------|----------------|----------------|---------------------|---------------------------|------------------------------------------|
| Colour .. .. .                 | White; bright. | White; bright. | White; bright.      | White; bright.            | White with slight tinge of creamy white. |
| Cleanliness .. .               | Clean.         | Clean.         | Clean.              | Perfectly clean.          | Bright; clean; a little stained.         |
| Feel .. .                      | Good soft.     | Smooth bodied. | Smooth and bodied.  | Smooth and bodied.        | Good soft.                               |
| Glaning and neppiness .. .     | Well-glaned.   | Well-glaned.   | Well-glaned.        | Very well-glaned.         | Well-glaned.                             |
| Seeds .. .                     | ..             | ..             | ..                  | ..                        | ..                                       |
| Card sliver .. .               | Clean.         | Clean.         | Clean.              | Clean, bright and smooth. | Clean and soft.                          |
| Card web .. .                  | Even.          | Good even.     | Even; nep-free.     | Even; nep-free.           | A little neppy.                          |
| Weight of ten flat strips .. . | 13.4 grams.    | 13.4 grams.    | 11.0 grams.         | 12.8 grams.               | 14.0 grams.                              |
| Remarks .. .                   | ..             | ..             | A desirable sample. | ..                        | ..                                       |

3. *Spinning Test Details and Results* :—See Table 13 on page 68.

## V.—REMARKS.

(i) *Fibre*.—This cotton showed a falling-off in staple length in 1934-35, from which, however, it has recovered in the following seasons. Its fibre-weight per inch has shown very little variation, but its fibre-strength is variable, the intrinsic strength being nearly 33 per cent. higher in 1933-34 than in 1937-38.

(ii) *Waste*.—This cotton is picked in a fairly clean condition and gave moderately low loss in the blow-room and normal loss in the card-room.

(iii) *Breakages*.—Except for the 1933-34 sample, yarn breakages in the ring frame are generally few upto 26's count, but fairly numerous in the 30's count.

(iv) *Yarns*.—This cotton gives even 20's and even to fairly even 26's yarns. Its yarns are inclined to be slightly neppy. Its performance during the two seasons 1934-36 showed a distinct improvement over that of 1933-34, but in the following season a set-back is noticeable from which, however, it has recovered in the current season. The following are the highest standard warp counts for which this cotton has been adjudged suitable in the five seasons :—

|               |       |
|---------------|-------|
| 1933-34 .. .. | 25's. |
| 1934-35 .. .. | 30's. |
| 1935-36 .. .. | 31's. |
| 1936-37 .. .. | 27's. |
| 1937-38 .. .. | 30's. |

Table 13.—SPINNING TEST RESULTS FOR V. 434 (AKOLA).

SPINDLE SPEED (1937-38).  
 20'sA .. 9,425 r.p.m.  
 20'sB .. 10,150 r.p.m.  
 20's .. 10,200 r.p.m.  
 30's .. 9,450 r.p.m.

TRAVELLER COUNTS.  
 20'sA .. 3/0  
 20'sB .. 3/0  
 20's .. 5/0  
 30's .. 7/0

HANK (1937-38).  
 Card .. 0.16  
 Slubber .. 0.77  
 Inter .. 1.66  
 Rover .. 4.48

|            |         | WASTE PERCENTAGES. |                  |                 |                 | RING FRAME PARTICULARS.* |             |                                           |                             | YARN TEST RESULTS. |                 |                |                 |                  |                       |                |                           |                  |                     | TEMPERATURE AND RELATIVE HUMIDITY (%). |                 |                           |                      |               |                |               |                            |                 |                |                        |    |
|------------|---------|--------------------|------------------|-----------------|-----------------|--------------------------|-------------|-------------------------------------------|-----------------------------|--------------------|-----------------|----------------|-----------------|------------------|-----------------------|----------------|---------------------------|------------------|---------------------|----------------------------------------|-----------------|---------------------------|----------------------|---------------|----------------|---------------|----------------------------|-----------------|----------------|------------------------|----|
| Sample No. | Season. | Date of Spinning.  | Count's Nominal. | Blow Room Loss. | Card Room Loss. | Spinning Loss.           | Total Loss. | Yarn Breakages per 100 spindles per hour. | Front Roller Speed ft. p.m. | Draft.             | Turns per inch. | LEA.           |                 |                  | BALISTIC.             |                |                           | SINGLE THREAD.   |                     |                                        |                 |                           |                      |               | Spinning Room. | Weaving Room. |                            |                 |                |                        |    |
|            |         |                    |                  |                 |                 |                          |             |                                           |                             |                    |                 | Counts Actual. | Strength (lbs.) | Irregularity (%) | Count-Strain Product. | Counts Actual. | Work of Rupture (lb.-in.) | Irregularity (%) | Count-Work Product. | Counts.                                | Strength (ozs.) | Strength Irregularity (%) | Weakness Percentage. | Extension (%) |                |               | Extension Irregularity (%) | Evenness Class. | Keps per yard. | Turns per inch Actual. |    |
| 2560       | 1934-35 | 10-12-34           | 20'sA            | 4.8             | 7.0             | 0.2                      | 12.0        | 5                                         | 103                         | 5.00               | 10.85           | 20.1           | 81.1            | 5.0              | 1,030                 | 20.0           | 137.1                     | 3.0              | 2,742               | 20.0                                   | 11.8            | 11.1                      | 2.2                  | 7.8           | 8.0            | 2             | 2.1                        | 16.1            | 81             | 60                     | 74 |
| 2987       | 1935-36 | 13-12-35           | 20'sA            | 7.5             | 8.0             | 0.3                      | 15.4        | 31                                        | 100                         | 4.00               | 10.85           | 20.5           | 77.8            | 9.5              | 1,505                 | 20.0           | 115.0                     | 3.5              | 2,912               | 20.0                                   | 10.0            | 11.0                      | 5.0                  | 6.8           | 7.0            | 3             | 1.2                        | 10.1            | 80             | 66                     | 70 |
| 3418       | 1936-37 | 10-11-30           | 20'sA            | 2.0             | 8.4             | 0.2                      | 10.6        | 5                                         | 102                         | 4.63               | 10.85           | 10.0           | 70.0            | 7.1              | 1,512                 | 20.2           | 137.4                     | 2.0              | 2,775               | 20.7                                   | 0.8             | 10.8                      | 11.0                 | 7.0           | 7.4            | 3             | 1.2                        | 10.2            | 80             | 70                     | 70 |
| 3035/1     | 1937-38 | 7-2-38             | 20'sA            | 7.2             | 8.3             | 0.3                      | 15.2        | 0                                         | 208                         | 4.78               | 10.85           | 20.7           | 70.0            | 7.8              | 1,654                 | 20.5           | 110.0                     | 4.2              | 2,862               | 20.1                                   | 11.9            | 12.7                      | 2.5                  | 7.8           | 8.0            | 3             | 2.0                        | 10.1            | 81             | 60                     | 63 |
| 3035/2     | 1937-38 | 11-2-38            | 20'sA            | 9.0             | 7.8             | 0.5                      | 11.4        | 10                                        | 208                         | 4.80               | 10.85           | 20.5           | 73.3            | 5.8              | 1,603                 | 20.7           | 135.0                     | 4.4              | 2,791               | 21.4                                   | 10.4            | 12.7                      | 3.0                  | 7.2           | 5.7            | 3             | 2.8                        | 10.3            | 81             | 60                     | 63 |
| 2218       | 1933-34 | 11-4-34            | 20'sB            | 4.5             | 7.4             | 0.4                      | 11.0        | 73                                        | 103                         | 0.90               | 17.03           | 10.6           | 81.1            | 4.7              | 1,000                 | 10.8           | 144.2                     | 3.3              | 2,855               | 10.5                                   | 13.0            | 10.7                      | 2.0                  | 0.3           | 0.2            | 3             | 1.0                        | 17.4            | 89             | 70                     | 70 |
| 2500       | 1934-35 | 10-12-34           | 20'sB            | ..              | ..              | ..                       | ..          | 10                                        | 202                         | 4.00               | 17.03           | 20.2           | 81.1            | 4.0              | 1,310                 | 20.0           | 112.0                     | 3.8              | 2,840               | 20.7                                   | 12.4            | 8.8                       | 0.8                  | 7.0           | 7.0            | 3             | 2.2                        | 17.2            | 81             | 67                     | 74 |
| 2987       | 1935-36 | 13-12-35           | 20'sB            | ..              | ..              | ..                       | ..          | 21                                        | 202                         | 4.60               | 17.03           | 10.0           | 81.8            | 0.3              | 1,387                 | 10.0           | 157.4                     | 3.2              | 3,095               | 20.0                                   | 11.0            | 11.4                      | 1.5                  | 0.8           | 0.2            | 3             | 1.0                        | 17.1            | 81             | 60                     | 63 |
| 3418       | 1936-37 | 10-11-30           | 20'sB            | ..              | ..              | ..                       | ..          | 5                                         | 200                         | 4.50               | 17.03           | 20.4           | 80.0            | 0.3              | 1,707                 | 20.0           | 135.8                     | 3.0              | 2,838               | 20.8                                   | 11.2            | 11.3                      | 0.2                  | 7.0           | 8.2            | 3             | 1.2                        | 17.2            | 85             | 60                     | 68 |
| 3035/1     | 1937-38 | 8-2-38             | 20'sB            | ..              | ..              | ..                       | ..          | 0                                         | 205                         | 4.78               | 17.03           | 20.1           | 93.3            | 5.0              | 1,873                 | 20.1           | 153.0                     | 4.5              | 3,075               | 10.7                                   | 13.2            | 7.3                       | 1.0                  | 8.1           | 8.2            | 3             | 1.8                        | 17.4            | 81             | 60                     | 60 |
| 3035/2     | 1937-38 | 11-2-38            | 20'sB            | ..              | ..              | ..                       | ..          | 5                                         | 211                         | 4.80               | 17.03           | 20.4           | 85.5            | 0.4              | 1,741                 | 20.0           | 113.0                     | 3.5              | 2,940               | 21.2                                   | 11.0            | 14.5                      | 0.5                  | 7.2           | 0.1            | 3             | 1.8                        | 17.3            | 81             | 67                     | 67 |
| 2218       | 1933-34 | 11-4-34            | 20's             | ..              | ..              | ..                       | ..          | 20                                        | 172                         | 0.90               | 20.23           | 20.0           | 60.5            | 11.5             | 1,100                 | 20.0           | 105.2                     | 2.8              | 2,735               | 20.0                                   | 8.3             | 11.0                      | 4.0                  | 5.3           | 0.0            | 3             | 0.8                        | 19.4            | 80             | 69                     | 70 |
| 2500       | 1934-35 | 10-12-34           | 20's             | ..              | ..              | ..                       | ..          | 8                                         | 176                         | 0.45               | 20.23           | 25.8           | 63.7            | 0.0              | 1,013                 | 20.1           | 105.0                     | 3.2              | 2,750               | 20.2                                   | 9.4             | 10.8                      | 3.8                  | 7.0           | 7.1            | 4             | 1.0                        | 19.4            | 81             | 67                     | 74 |
| 2987       | 1935-36 | 14-12-35           | 20's             | ..              | ..              | ..                       | ..          | 25                                        | 100                         | 5.00               | 20.23           | 25.4           | 63.0            | 6.1              | 1,742                 | 21.8           | 111.0                     | 2.7              | 2,763               | 25.0                                   | 0.1             | 13.0                      | 8.5                  | 0.4           | 8.0            | 4             | 1.2                        | 10.3            | 80             | 66                     | 63 |
| 3418       | 1936-37 | 12-11-30           | 20's             | ..              | ..              | ..                       | ..          | 10                                        | 106                         | 0.01               | 20.23           | 27.0           | 51.2            | 8.8              | 1,403                 | 20.0           | 103.2                     | 3.0              | 2,745               | 27.5                                   | 7.2             | 10.4                      | 10.2                 | 0.2           | 11.3           | 4             | 1.3                        | 10.2            | 84             | 70                     | 69 |
| 3035/1     | 1937-38 | 8-2-38             | 20's             | ..              | ..              | ..                       | ..          | 28                                        | 183                         | 0.11               | 20.23           | 25.5           | 60.1            | 7.0              | 1,680                 | 25.7           | 103.2                     | 2.5              | 2,781               | 20.0                                   | 8.5             | 17.3                      | 7.6                  | 7.2           | 10.5           | 4             | 1.8                        | 19.3            | 82             | 65                     | 67 |
| 3035/2     | 1937-38 | 11-2-38            | 20's             | ..              | ..              | ..                       | ..          | 24                                        | 183                         | 0.25               | 20.23           | 20.3           | 58.0            | 0.3              | 1,625                 | 20.0           | 101.1                     | 2.0              | 2,777               | 20.7                                   | 8.7             | 12.3                      | 3.6                  | 6.7           | 0.7            | 4             | 1.8                        | 19.5            | 80             | 67                     | 63 |
| 2218       | 1933-34 | 11-4-34            | 30's             | ..              | ..              | ..                       | ..          | 33                                        | 150                         | 0.70               | 31.80           | 20.4           | 40.5            | 9.3              | 1,370                 | 20.0           | 92.0                      | 3.3              | 2,723               | 31.1                                   | 7.2             | 11.0                      | 4.0                  | 5.2           | 12.7           | 4             | 1.0                        | 21.1            | 89             | 70                     | 60 |
| 2987       | 1935-36 | 10-12-35           | 30's             | ..              | ..              | ..                       | ..          | 20                                        | 160                         | 0.07               | 21.80           | 30.4           | 60.0            | 8.5              | 1,220                 | 20.1           | 92.0                      | 2.7              | 2,703               | 31.3                                   | 0.9             | 13.0                      | 4.5                  | 0.1           | 7.5            | 5             | 0.8                        | 21.0            | 80             | 60                     | 60 |
| 3418       | 1936-37 | 12-11-30           | 30's             | ..              | ..              | ..                       | ..          | 15                                        | 124                         | 0.91               | 21.80           | 30.8           | 42.8            | 10.0             | 1,318                 | 31.2           | 80.1                      | 2.5              | 2,780               | 31.7                                   | 0.2             | 18.4                      | 13.8                 | 0.0           | 11.1           | 5             | 1.5                        | 20.8            | 84             | 74                     | 63 |
| 3035/1     | 1937-38 | 10-2-38            | 30's             | ..              | ..              | ..                       | ..          | 10                                        | 100                         | 0.07               | 21.80           | 30.2           | 53.3            | 5.4              | 1,570                 | 30.0           | 91.4                      | 2.5              | 2,832               | 30.2                                   | 7.5             | 11.5                      | 5.0                  | 0.0           | 8.1            | 4             | 2.0                        | 20.0            | 81             | 66                     | 67 |
| 3035/2     | 1937-38 | 14-2-38            | 30's             | ..              | ..              | ..                       | ..          | 23                                        | 100                         | 7.05               | 21.80           | 30.7           | 40.1            | 5.0              | 1,507                 | 31.1           | 91.0                      | 2.3              | 2,830               | 31.4                                   | 7.4             | 11.9                      | 4.5                  | 0.5           | 8.2            | 4             | 2.2                        | 21.1            | 81             | 69                     | 67 |

\* Diameter of ring frame front roller—1 inch; diameter of rings—13 inch.

\* Diameter of ring frame front roller—1 inch; diameter of ring—1 1/8 inch.

## 14.—LATE VERUM (Nagpur).

|            |   |                            |
|------------|---|----------------------------|
| Seasons .. | { | 1930-31 (Sample No. 911).  |
|            |   | 1931-32 (Sample No. 1244). |
|            |   | 1932-33 (Sample No. 1640). |
|            |   | 1933-34 (Sample No. 2204). |
|            |   | 1934-35 (Sample No. 2557). |
|            |   | 1935-36 (Sample No. 3003). |
|            |   | 1936-37 (Sample No. 3456). |
|            |   | 1937-38 (Sample No. 3887). |

## I.—AGRICULTURAL DETAILS.

- a) *Botanical Species* :—*Gossypium neglectum verum*.
- b) *History* :—A pure line selection isolated in 1929 and known as Late Verum.
- c) *District of growth* :—Central Provinces and Berar. The particular samples used in these tests were grown at the Government Farm, Nagpur.
- d) *Growing period* :—June to December.
- e) *Soil* :—Black cotton soil.
- f) *Rainfall* :—35 to 40 inches.
- g) *Temperature* :—Maximum temperatures : June—110°F.; January—85°F.
- h) *Plant particulars (average values)* :—
- Bolls per plant : 17.
  - Seeds per boll : 21.
  - Weight of seed : 65 milligrammes.
  - Weight of lint per seed : 27 milligrammes.
  - Ginning percentage : 29.
- i) *Yield of seed-cotton* :—400 to 800 lbs. per acre according to soil and climatic conditions.
- j) *Area under cultivation* :—About 1,500 acres in 1933-34.
- |   |        |   |          |
|---|--------|---|----------|
| „ | 10,000 | „ | 1934-35. |
| „ | 18,500 | „ | 1935-36. |
| „ | 29,000 | „ | 1936-37. |
| „ | 16,960 | „ | 1937-38. |

## II.—GRADER'S REPORT.

|                            | 1930-31.   | 1931-32.          | 1932-33.          | 1933-34.          | 1934-35.          | 1935-36.          | 1936-37.            | 1937-38.          |
|----------------------------|------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------|-------------------|
| St valued                  | Broach.    | Broach.           | Broach.           | Broach.           | Broach.           | Broach.           | Broach A/M.         | Broach.           |
| Superfine.                 | Superfine. | Extra super-fine. | Extra super-fine. | Extra super-fine. | Extra super-fine. | Extra super-fine. | Choice super-fine.  | Extra super-fine. |
| White.                     | White.     | White.            | White.            | White.            | White.            | Bright white.     | Bright white.       | White.            |
| ..                         | ..         | ..                | ..                | ..                | ..                | ..                | Very silky.         | ..                |
| Length .                   | 1 inch.    | 15/16 inch.       | 31/32 inch.       | 1 inch.           | 31/32 inch.       | Full 3/4 inch.    | Full 7/8 inch.      | Barely 13/16      |
| Strength                   | Good.      | Fair.             | Good.             | Good.             | Good.             | Good.             | Very good.          | Moderate.         |
| urity ..                   | Good.      | Fair.             | Fair.             | Fair.             | Fair.             | Regular.          | Very regular.       | Somewhat wasty.   |
| Above or con-<br>v rate .. | Rs. 40 on. | Rs. 50 on.        | Rs. 50 on.        | Rs. 75 on.        | Rs. 90 on.        | Rs. 35 on.        | Rs. 45 on.          | Rs. 25 on.        |
| ..                         | Rs. 194.   | Rs. 210.          | Rs. 185.          | Rs. 198.          | Rs. 220.          | Rs. 210.          | Rs. 228.            | Rs. 170.          |
| of valua-<br>..            | 29-11-30.  | 1-2-32.           | 13-2-33.          | 6-4-34.           | 3-12-34.          | 0-1-36.           | 30-1-37.            | 27-12-37.         |
| ks ..                      | ..         | ..                | ..                | ..                | ..                | ..                | A desirable cotton. | ..                |

### III.—FIBRE PARTICULARS.

#### 1. Fibre-Length Distribution (Balls Sorter):—

| Mean group-length in eighths of an inch | Percentage. |          |          |          |          |          |          |          |
|-----------------------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|
|                                         | 1930-31.    | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |
| 2                                       | 0.5         | 0        | 0        | 0.9      | 0.8      | 0.4      | 0.3      | 0.8      |
| 3                                       | 1.0         | 1.3      | 2.0      | 2.0      | 2.2      | 2.4      | 1.0      | 1.8      |
| 4                                       | 3.5         | 3.2      | 3.4      | 4.1      | 4.2      | 5.0      | 3.2      | 3.9      |
| 5                                       | 6.8         | 7.2      | 7.4      | 8.0      | 9.3      | 8.8      | 9.1      | 8.8      |
| 6                                       | 16.1        | 13.0     | 17.0     | 17.6     | 18.0     | 18.2     | 21.5     | 20.0     |
| 7                                       | 32.6        | 32.2     | 31.4     | 30.3     | 28.3     | 27.4     | 20.7     | 31.2     |
| 8                                       | 28.4        | 31.3     | 26.0     | 23.0     | 24.0     | 24.6     | 22.2     | 21.8     |
| 9                                       | 9.0         | 8.8      | 9.8      | 8.8      | 9.5      | 10.3     | 8.1      | 9.1      |
| 10                                      | 2.1         | 2.4      | 2.4      | 3.2      | 2.8      | 2.7      | 3.4      | 3.1      |
| 11                                      | 0.1         | 0        | 0        | 0        | 0        | 0.2      | 0.6      | 0        |

#### 2. Fibre-length (inch):—

|                                                    |       |       |       |       |       |       |       |       |
|----------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| (a) By Balls Sorter                                | 0.89  | 0.89  | 0.88  | 0.86  | 0.80  | 0.80  | 0.87  | 0.80  |
| (b) By Baer Sorter                                 | 0.90  | 0.88  | 0.85  | 0.88  | 0.80  | 0.85  | 0.87  | 0.80  |
| 3. Fibre-length Irregularity (%)                   | 14.2  | 13.8  | 12.8  | 10.1  | 16.1  | 16.6  | 12.6  | 14.1  |
| 4. Fibre-weight per inch (millimouth of an ounce). | 0.184 | 0.181 | 0.184 | 0.175 | 0.180 | 0.180 | 0.176 | 0.173 |

#### 5. Fibre-strength (oz.):—

|                                                   |       |    |    |       |       |       |       |       |
|---------------------------------------------------|-------|----|----|-------|-------|-------|-------|-------|
| (a) By Balls Tester                               | 0.166 | .. | .. | 0.185 | 0.173 | 0.184 | 0.188 | 0.100 |
| (b) By O'Neill Tester                             | 0.169 | .. | .. | 0.167 | 0.183 | 0.188 | 0.164 | 0.104 |
| 6. Fibre-strength per unit fibre-weight per inch. | 0.88  | .. | .. | 1.00  | 0.94  | 1.00  | 1.00  | 0.94  |

#### 7. Maturity Test Results (%)

|                 |    |    |    |    |    |    |    |    |
|-----------------|----|----|----|----|----|----|----|----|
| (a) Mature      | .. | .. | .. | .. | 70 | 67 | 63 | 73 |
| (b) Half-mature | .. | .. | .. | .. | 14 | 20 | 19 | 12 |
| (c) Immature    | .. | .. | .. | .. | 16 | 13 | 18 | 16 |

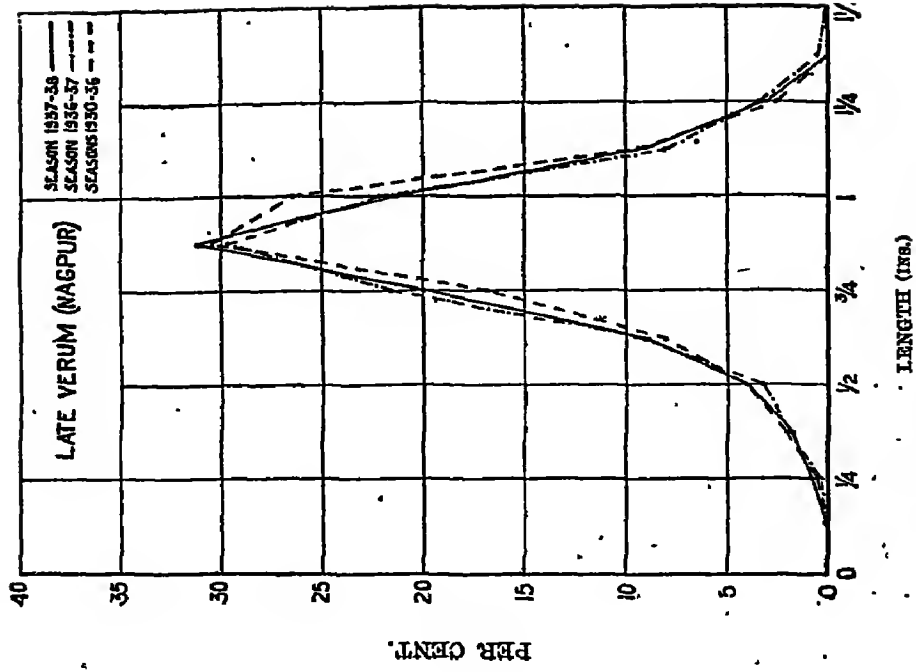


Fig. 14.—Sorter Diagrams for Late Verum (Nagpur).

## IV.—SPINNING TESTS.

*Treatment :—*

(a) *Blow-room*.—Upto 1934-35 (inclusive) :—Lattice Feeder, Crighton (twice), Hopper, Scutcher (3 times). The 1930-31 and 1933-34 samples were passed through the Crighton once only.

1935-36 onwards :—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust-trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

(b) *Card-room*.—Upto 1934-35 (inclusive) :—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards :—Same as above but spun from single hank roving on Ring Frame No. 3 which is fitted with tape drive arrangement for spindles while Ring Frame No. 1 possesses a band drive arrangement.

*Spinning Master's Report :—*

|             | 1930-31.                | 1931-32.            | 1932-33.            | 1933-34.                 | 1934-35.            | 1935-36.            | 1936-37.                        | 1937-38.                                |
|-------------|-------------------------|---------------------|---------------------|--------------------------|---------------------|---------------------|---------------------------------|-----------------------------------------|
| .. ..       | White; very bright.     | White; bright       | White; bright.      | White; pearly bright.    | White; very bright. | White; bright.      | White.                          | White with light tinge of creamy-white. |
| .. ..       | Very clean              | Very clean          | Fairly clean        | Perfectly clean.         | Perfectly clean.    | Perfectly clean.    | Very clean.                     | Very clean.                             |
| .. ..       | Nicely soft and bodied. | Good softish        | Good                | Smooth and bodied.       | Good soft           | Smooth and bodied.  | Soft smooth.                    | Good soft.                              |
| d neppiness | Very well ginned.       | Well-ginned         | Very well ginned.   | Well-ginned              | Well-ginned         | Well-ginned         | Well-ginned                     | Well-ginned.                            |
| .. ..       | ..                      | ..                  | ..                  | ..                       | ..                  | ..                  | ..                              | ..                                      |
| .. ..       | ..                      | Clean               | Clean               | Clean                    | Clean               | Clean               | Clean and soft.                 | Clean and soft.                         |
| .. ..       | ..                      | Even and nepp-free. | Even and nepp-free. | Even and nepp-free.      | Good; even          | Even and nepp-free. | Clean, even but a little neppy. | Good; almost free of nepps.             |
| ten flat    | ..                      | 12.7 grams          | 11.1 grams          | 12.4 grams               | 10.8 grams          | 10.4 grams          | 11.1 grams                      | 12.6 grams.                             |
| .. ..       | A very strong cotton.   | ..                  | ..                  | A very desirable cotton. | ..                  | ..                  | ..                              | ..                                      |

*Spinning Tests Details and Results :—*See Table 14 on page 72.

## V.—REMARKS.

) *Fibre*.—This cotton has so far shown remarkable consistency in its fibre test, especially since 1932-33, the earlier samples being slightly longer in staple. The 1938 sample has practically the same mean fibre-length and fibre-weight per inch as predecessor. It has a somewhat higher percentage of mature fibres, but its fibre-strength and its fibre-length irregularity is a little higher than that of the 1936-37 sample.

) *Waste*.—This cotton has been picked in a very clean condition and has uniformly a low blow-room loss. The card-room loss is 7-8 per cent.

) *Breakages*.—Yarn breakages in the ring frame are generally few even upto 30's, though in the case of the 1932-33 and 1933-34 samples they were fairly numerous two higher counts into which this cotton was spun.

) *Yarns*.—This cotton generally gives even 20's and even to fairly even 26's. Its yarns are somewhat neppy, those of 1934-35 being better than the others in this respect.

) *Conclusions*.—This cotton has shown very little variation in its fibre-properties and has given good spinning performance for its class. A small improvement in the latter is noticeable since 1933-34, which reached its peak value in 1934-35, when this cotton gave the best results. From its yarn-strength results, this cotton has been adjudged suitable for spinning upto the following highest standard warp counts :—

|         |    |       |         |    |       |
|---------|----|-------|---------|----|-------|
| 1930-31 | .. | 30's. | 1934-35 | .. | 36's. |
| 1931-32 | .. | 29's. | 1935-36 | .. | 33's. |
| 1932-33 | .. | 31's. | 1936-37 | .. | 31's. |
| 1933-34 | .. | 34's. | 1937-38 | .. | 33's. |

| Sample No. | Season. | Date of Spinning. | Combs Nominal. | WASTE PERCENTAGES. |                 |                |             | RING FRAME PARTICULARS.* |                              |        |                 | YARN TEST RESULTS. |              |                |                |                              |                        |                |         |                 |                            | TEMPERATURE (%).     |                | RELATIVE HUMIDITY (%).      |                 |                 |                        |                |               |
|------------|---------|-------------------|----------------|--------------------|-----------------|----------------|-------------|--------------------------|------------------------------|--------|-----------------|--------------------|--------------|----------------|----------------|------------------------------|------------------------|----------------|---------|-----------------|----------------------------|----------------------|----------------|-----------------------------|-----------------|-----------------|------------------------|----------------|---------------|
|            |         |                   |                | Blow Room Loss.    | Card Room Loss. | Spinning Loss. | Total Loss. | Yarn Breakages per 100   | Front Roller Speed, R. P. M. | Draft. | Turns per inch. | LAL.               |              |                | BALISTRO.      |                              |                        | SINGLE THREAD. |         |                 |                            |                      |                |                             |                 |                 |                        |                |               |
|            |         |                   |                |                    |                 |                |             |                          |                              |        |                 | Strength (lbs.)    | Strength (%) | Count/Strength | Counts Actual. | Work of Knotting (inch-lbs.) | Work Irregularity (%). | Count/Work     | Counts. | Strength (ozs.) | Strength Irregularity (%). | Weakness Percentage. | Extension (%). | Extension Irregularity (%). | Evenness Class. | Neeps per yard. | Turns per inch Actual. | Spinning Room. | Testing Room. |
| 911        |         | 1930-31           | 20A            | 3.6                | 7.1             | 0.4            | 10.2        | 10                       | 183                          | 5.32   | 10.85           | 79.4               | 4.2          | 1,004          | 10.0           | 148.9                        | 3.6                    | 2,563          | 20.0    | 10.6            | 9.8                        | 1.8                  | 0.6            | 7.5                         | 4               | 2.4             | 16.1                   | 86             | 84            |
| 2557       |         | 1934-35           | 20A            | 4.2                | 7.0             | 0.4            | 11.2        | 10                       | 194                          | 4.94   | 16.85           | 93.2               | 4.8          | 1,004          | 10.0           | 148.9                        | 3.6                    | 2,563          | 20.3    | 13.8            | 8.1                        | 0.5                  | 0.8            | 7.8                         | 5               | 0.0             | 10.2                   | 82             | 72            |
| 3003       |         | 1935-36           | 20A            | 2.8                | 9.0             | 0.2            | 11.8        | 26                       | 182                          | 4.79   | 16.85           | 70.7               | 6.2          | 1,587          | 20.4           | 140.4                        | 3.0                    | 2,804          | 20.4    | 11.1            | 11.0                       | 4.0                  | 7.5            | 8.7                         | 3               | 1.2             | 10.0                   | 85             | 04            |
| 3456       |         | 1936-37           | 20A            | 2.6                | 6.8             | 0.4            | 9.8         | 20                       | 194                          | 4.68   | 16.85           | 73.8               | 0.6          | 1,513          | 20.2           | 141.2                        | 3.7                    | 2,882          | 21.3    | 10.1            | 13.0                       | 8.0                  | 6.8            | 8.0                         | 3               | 1.5             | 10.0                   | 80             | 06            |
| 3887/1     |         | 1937-38           | 20A            | 4.6                | 7.4             | 0.4            | 12.0        | 10                       | 204                          | 4.53   | 16.85           | 80.2               | 0.4          | 1,630          | 20.2           | 146.8                        | 3.7                    | 2,882          | 20.2    | 12.0            | 0.0                        | 1.0                  | 7.3            | 8.3                         | 3               | 2.2             | 10.2                   | 81             | 08            |
| 3887/2     |         | 1937-38           | 20A            | 4.0                | 7.2             | 0.4            | 11.2        | 10                       | 202                          | 4.53   | 16.85           | 80.0               | 0.5          | 1,634          | 20.1           | 145.2                        | 3.7                    | 2,878          | 20.4    | 12.0            | 11.0                       | 4.0                  | 6.0            | 8.9                         | 3               | 2.2             | 16.4                   | 83             | 08            |
| 011        |         | 1930-31           | 20B            | 2.7                | 7.4             | 0.4            | 10.2        | 15                       | 198                          | 5.26   | 17.08           | 88.2               | 5.5          | 1,784          | ..             | ..                           | ..                     | ..             | 20.0    | 11.4            | 11.3                       | 3.6                  | 7.0            | 7.8                         | 3               | 2.7             | 17.2                   | 84             | 02            |
| 1244       |         | 1931-32           | 20B            | ..                 | ..              | ..             | ..          | 0                        | 193                          | 6.10   | 17.08           | 87.9               | 4.7          | 1,758          | ..             | ..                           | ..                     | ..             | 20.6    | 11.3            | 9.8                        | 2.0                  | 0.9            | 8.0                         | 2               | 1.7             | 17.1                   | 81             | 07            |
| 1640       |         | 1932-33           | 20B            | 5.2                | 9.0             | 0.4            | 12.0        | 21                       | 197                          | 6.05   | 17.08           | 87.8               | 3.0          | 1,721          | 20.2           | 135.8                        | 3.7                    | 2,743          | 19.8    | 10.0            | 13.7                       | 7.0                  | 7.8            | 8.4                         | 3               | 1.5             | 17.2                   | 81             | 05            |
| 2264       |         | 1933-34           | 20B            | 2.3                | 7.0             | 0.4            | 10.4        | 5                        | 198                          | 6.10   | 17.08           | 88.5               | 3.7          | 1,761          | 20.2           | 135.8                        | 3.7                    | 2,743          | 21.3    | 10.1            | 13.4                       | 8.0                  | 6.2            | 9.4                         | 2               | 1.2             | 17.1                   | 89             | 74            |
| 2557       |         | 1934-35           | 20B            | ..                 | ..              | ..             | ..          | 10                       | 200                          | 5.00   | 17.08           | 100.8              | 5.7          | 2,050          | 20.3           | 155.4                        | 4.2                    | 3,155          | 20.8    | 14.0            | 8.0                        | 0.8                  | 8.2            | 7.9                         | 3               | 0.0             | 17.3                   | 83             | 73            |
| 3003       |         | 1935-36           | 20B            | ..                 | ..              | ..             | ..          | 5                        | 198                          | 4.79   | 17.08           | 88.4               | 5.2          | 1,803          | 20.3           | 140.4                        | 3.0                    | 3,033          | 20.3    | 12.0            | 12.0                       | 2.5                  | 7.0            | 7.9                         | 3               | 1.8             | 17.0                   | 84             | 05            |
| 3456       |         | 1936-37           | 20B            | ..                 | ..              | ..             | ..          | 2                        | 200                          | 4.73   | 17.08           | 90.7               | 0.2          | 1,832          | 20.0           | 148.7                        | 4.0                    | 2,804          | 20.8    | 11.0            | 11.2                       | 2.5                  | 6.9            | 8.1                         | 3               | 1.0             | 17.2                   | 80             | 08            |
| 3887/1     |         | 1937-38           | 20B            | ..                 | ..              | ..             | ..          | 10                       | 210                          | 4.53   | 17.08           | 90.8               | 6.0          | 1,948          | 19.2           | 109.4                        | 4.9                    | 3,252          | 19.8    | 13.0            | 10.1                       | 1.0                  | 7.4            | 7.0                         | 3               | 1.8             | 17.4                   | 82             | 09            |
| 3887/2     |         | 1937-38           | 20B            | ..                 | ..              | ..             | ..          | 31                       | 210                          | 4.53   | 17.08           | 90.5               | 6.0          | 1,911          | 10.8           | 151.0                        | 4.0                    | 3,002          | 20.3    | 13.2            | 8.8                        | 0                    | 7.3            | 8.8                         | 3               | 2.2             | 17.0                   | 83             | 07            |
| 011        |         | 1930-31           | 26             | ..                 | ..              | ..             | ..          | 20                       | 174                          | 6.90   | 20.23           | 90.8               | 5.7          | 1,581          | ..             | ..                           | ..                     | ..             | 26.0    | 8.0             | 11.0                       | 2.8                  | 6.2            | 0.4                         | 4               | 2.8             | 19.3                   | 82             | 64            |
| 1244       |         | 1931-32           | 26             | ..                 | ..              | ..             | ..          | 15                       | 172                          | 6.71   | 20.23           | 91.8               | 4.6          | 1,586          | ..             | ..                           | ..                     | ..             | 26.0    | 7.9             | 10.1                       | 1.0                  | 0.4            | 0.3                         | 4               | 2.8             | 19.3                   | 82             | 07            |
| 1640       |         | 1932-33           | 26             | ..                 | ..              | ..             | ..          | 20                       | 175                          | 5.98   | 20.23           | 91.5               | 5.0          | 1,593          | 25.0           | ..                           | ..                     | ..             | 27.0    | 9.0             | 13.7                       | 5.0                  | 0.8            | 8.9                         | 4               | 1.9             | 19.0                   | 80             | 72            |
| 2264       |         | 1933-34           | 26             | ..                 | ..              | ..             | ..          | 36                       | 170                          | 5.93   | 20.23           | 96.9               | 6.0          | 1,076          | 25.0           | 103.0                        | 3.1                    | 2,583          | 25.8    | 8.5             | 12.3                       | 4.5                  | 5.8            | 11.2                        | 3               | 1.5             | 10.3                   | 80             | 68            |
| 2557       |         | 1934-35           | 26             | ..                 | ..              | ..             | ..          | 0                        | 172                          | 6.47   | 20.23           | 91.7               | 6.2          | 1,583          | 24.2           | 110.0                        | 2.0                    | 2,882          | 26.0    | 10.1            | 10.3                       | 1.0                  | 0.2            | 8.0                         | 4               | 0.0             | 10.0                   | 82             | 66            |
| 3003       |         | 1935-36           | 26             | ..                 | ..              | ..             | ..          | 12                       | 161                          | 6.18   | 20.23           | 91.7               | 6.2          | 1,629          | 26.0           | 104.0                        | 2.8                    | 2,706          | 26.5    | 8.6             | 13.0                       | 4.6                  | 0.8            | 8.3                         | 4               | 2.5             | 20.0                   | 80             | 64            |
| 3456       |         | 1936-37           | 26             | ..                 | ..              | ..             | ..          | 10                       | 193                          | 5.00   | 20.23           | 92.2               | 7.0          | 1,908          | 26.4           | 107.7                        | 2.8                    | 2,843          | 26.0    | 8.5             | 13.4                       | 3.8                  | 0.2            | 7.2                         | 4               | 1.0             | 10.1                   | 81             | 04            |
| 3887/1     |         | 1937-38           | 26             | ..                 | ..              | ..             | ..          | 18                       | 185                          | 5.88   | 20.23           | 95.0               | 8.6          | 1,712          | 26.0           | 108.2                        | 2.5                    | 2,770          | 26.2    | 0.4             | 10.7                       | 1.5                  | 0.2            | 8.2                         | 4               | 2.0             | 19.5                   | 82             | 00            |
| 3887/2     |         | 1937-38           | 26             | ..                 | ..              | ..             | ..          | 0                        | 182                          | 6.00   | 20.23           | 90.4               | 0.4          | 1,687          | 25.8           | 105.2                        | 2.3                    | 2,714          | 27.2    | 8.9             | 11.0                       | 2.0                  | 0.5            | 8.4                         | 4               | 1.5             | 19.5                   | 83             | 07            |
| 1244       |         | 1931-32           | 30             | ..                 | ..              | ..             | ..          | 20                       | 159                          | 7.73   | 21.80           | 47.3               | 6.0          | 1,406          | ..             | ..                           | ..                     | ..             | 30.5    | 6.0             | 12.6                       | 2.0                  | 5.9            | 9.4                         | 4               | 2.7             | 21.2                   | 82             | 65            |
| 1640       |         | 1932-33           | 30             | ..                 | ..              | ..             | ..          | 00                       | 159                          | 6.89   | 21.80           | 50.2               | 6.2          | 1,481          | ..             | ..                           | ..                     | ..             | 30.5    | 6.4             | 12.7                       | 8.0                  | 0.4            | 10.4                        | 4               | 2.0             | 21.2                   | 81             | 65            |
| 2264       |         | 1933-34           | 30             | ..                 | ..              | ..             | ..          | 33                       | 153                          | 6.02   | 21.80           | 54.5               | 0.8          | 1,586          | 29.1           | 80.4                         | 3.5                    | 2,064          | 30.0    | 6.7             | 16.7                       | 8.0                  | 5.1            | 13.0                        | 4               | 1.5             | 21.0                   | 88             | 72            |
| 2557       |         | 1934-35           | 30             | ..                 | ..              | ..             | ..          | 10                       | 160                          | 7.30   | 21.80           | 50.0               | 4.4          | 1,782          | 29.1           | 97.0                         | 2.4                    | 2,840          | 30.7    | 8.6             | 0.8                        | 2.2                  | 5.8            | 10.0                        | 5               | 0.8             | 21.1                   | 82             | 66            |
| 3003       |         | 1935-36           | 30             | ..                 | ..              | ..             | ..          | 13                       | 143                          | 6.97   | 21.80           | 53.5               | 8.0          | 1,578          | 29.8           | 98.2                         | 2.8                    | 2,807          | 29.1    | 7.0             | 12.1                       | 4.0                  | 0.9            | 7.0                         | 5               | 2.2             | 21.7                   | 79             | 08            |
| 3456       |         | 1936-37           | 30             | ..                 | ..              | ..             | ..          | 23                       | 143                          | 6.88   | 21.80           | 54.7               | 9.3          | 1,491          | 29.8           | 91.2                         | 2.8                    | 2,800          | 30.4    | 8.9             | 13.9                       | 7.2                  | 0.2            | 10.2                        | 5               | 2.0             | 20.8                   | 82             | 09            |
| 3887/1     |         | 1937-38           | 30             | ..                 | ..              | ..             | ..          | 13                       | 176                          | 6.76   | 21.80           | 56.1               | 7.8          | 1,634          | 29.0           | 94.4                         | 3.3                    | 2,738          | 30.3    | 8.5             | 12.5                       | 4.6                  | 8.2            | 9.1                         | 5               | 1.8             | 21.0                   | 83             | 07            |
| 3887/2     |         | 1937-38           | 30             | ..                 | ..              | ..             | ..          | 20                       | 175                          | 6.71   | 21.80           | 52.3               | 8.7          | 1,600          | 29.3           | 93.0                         | 3.0                    | 2,742          | 30.5    | 8.0             | 11.4                       | 3.0                  | 0.4            | 9.1                         | 5               | 2.8             | 21.2                   | 83             | 07            |
| 2557       |         | 1934-35           | 34             | ..                 | ..              | ..             | ..          | 12                       | 140                          | 8.23   | 23.20           | 49.2               | 5.6          | 1,643          | 33.0           | 87.9                         | 2.6                    | 2,943          | 34.4    | 7.4             | 13.2                       | 6.0                  | 5.8            | 13.8                        | 6               | 0.9             | 22.6                   | 81             | 72            |

\* Diameter of ring-frame front roller: 1 1/2". Diameter of ring: 1 1/2".

|                           |                            |
|---------------------------|----------------------------|
| 1924-25 (Sample No. 82).  | 1931-32 (Sample No. 1228). |
| 1925-26 (Sample No. 114). | 1932-33 (Sample No. 1595). |
| 1926-27 (Sample No. 203). | 1933-34 (Sample No. 2053). |
| 1927-28 (Sample No. 333). | 1934-35 (Sample No. 2610). |
| 1928-29 (Sample No. 451). | 1935-36 (Sample No. 3018). |
| 1929-30 (Sample No. 635). | 1936-37 (Sample No. 3430). |
| 1930-31 (Sample No. 981). | 1937-38 (Sample No. 3919). |

- (i) *Botanical species* :—*Gossypium indicum* (see “History” below).
- (ii) *History* :—Umri Bani is not a pure strain or selected type but is the nearest approach to pure Bani (*G. indicum*) also known as Hyderabad Gaorani, grown on a commercial scale. The commercial crop is made up of 70-80 per cent. of *Gossypium indicum* mixed with a varying percentage of *G. hirsutum*.
- (iii) *District of growth* :—Hyderabad Gaorani is grown in a state of comparative purity in Nader district and in parts of Parbhani, Osmanabad and Adilabad districts of Nizam's Dominions; it also forms an important component of the cottons of the remainder of the Mahrattwara Division of Hyderabad State.
- (iv) *Growing period* :—Sown in June, and picked from October to January.
- (v) *Soil* :—Mainly black cotton soil.
- (vi) *Rainfall* :—From 25 inches annually in the Osmanabad district on the south-west of Gaorani tract to 50 inches in Adilabad district in the north-east.
- (vii) *Temperature* :—Mean minimum varies from about 50° F. in December and January to about 75° F. in May and June. Mean maximum varies from about 85° F. (June to September) to about 102° F. (April, May).
- (viii) *Plant particulars (average values)* :—
  - (a) Seeds per boll : 18.
  - (b) Weight of seed : 54 mgms.
  - (c) Weight of lint per seed : 21 mgms.
  - (d) Ginning percentage : 28.
- (ix) *Yield of seed-cotton* :—Commercial crop : 250-300 lbs. per acre.
- (x) *Area under cultivation* :—

|         | Under Government seed. | Under cultivators' seed. |
|---------|------------------------|--------------------------|
|         | (Acres.)               | (Acres.)                 |
| 1928-29 | 2,25,000               | 5,40,000                 |
| 1930-31 | 2,25,000               | 9,71,150                 |
| 1931-32 | 98,800                 | 6,30,000                 |
| 1932-33 | 1,87,500               | 4,73,570                 |
| 1933-34 | 1,71,520               | 7,54,040                 |
| 1934-35 | 82,760                 | 7,30,720                 |
| 1935-36 | 47,050                 | 8,90,320                 |
| 1936-37 | 18,890                 | 7,18,520                 |
| 1937-38 | 51,880                 | 7,88,960                 |

## II.—GRADER'S REPORT.

[illegible]



## III.—FIBRE PARTICULARS.

## 1. Fibre-Length Distribution (Balls Sorted) :—

| Mean group-length in<br>feet of an inch. | Percentage. |          |          |          |          |          |          |          |          |          |
|------------------------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|                                          | 1924-25.    | 1920-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |
| 2                                        | 0.5         | 2.2      | 0.8      | ..       | 0.6      | 0.2      | 0.8      | 0.2      | 1.1      | 1.2      |
| 3                                        | 1.0         | 4.8      | 2.3      | 2.1      | 2.7      | 1.9      | 2.4      | 2.0      | 2.3      | 2.0      |
| 4                                        | 4.1         | 11.0     | 5.1      | 5.6      | 5.0      | 4.0      | 5.3      | 4.7      | 5.7      | 4.0      |
| 5                                        | 10.6        | 25.5     | 14.2     | 14.0     | 12.2     | 10.7     | 12.4     | 18.3     | 13.6     | 9.2      |
| 6                                        | 23.4        | 36.5     | 30.5     | 31.1     | 23.8     | 32.6     | 20.0     | 29.9     | 20.0     | 23.2     |
| 7                                        | 36.3        | 16.7     | 30.8     | 32.0     | 32.1     | 32.7     | 30.4     | 28.0     | 28.6     | 32.7     |
| 8                                        | 18.1        | 10.7     | 12.3     | 11.3     | 17.0     | 19.5     | 17.7     | 15.0     | 10.0     | 18.8     |
| 9                                        | 4.6         | 4.3      | 3.5      | 3.0      | 4.8      | 5.0      | 4.1      | 4.4      | 4.8      | 6.0      |
| 10                                       | 0.8         | ..       | 0.5      | ..       | 0.0      | 1.5      | 0.8      | 0.7      | 1.3      | 2.0      |
| 11                                       | ..          | ..       | ..       | ..       | ..       | ..       | 0.1      | ..       | ..       | ..       |

## 2. Fibre-Length (inch) :—

|                                                        |        |       |       |       |       |       |       |       |       |       |
|--------------------------------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| (a) By Balls Sorter ..                                 | 0.83   | 0.82  | 0.70  | 0.70  | 0.81  | 0.84  | 0.81  | 0.81  | 0.81  | 0.84  |
| (b) By Box Sorter ..                                   | 0.83   | 0.80  | 0.81  | 0.70  | 0.81  | 0.82  | 0.82  | 0.82  | 0.83  | 0.83  |
| 3. Fibre-Length Irregularity (%) ..                    | ..     | 14.8  | 14.0  | 13.7  | 17.9  | 13.9  | 10.3  | 12.3  | 10.0  | 14.3  |
| 4. Fibre-Weight per inch (millim of an ounce) ..       | 0.180  | 0.153 | 0.175 | 0.172 | 0.175 | 0.100 | 0.109 | 0.100 | 0.188 | 0.174 |
| 5. Fibre-Strength (oz.) :—                             |        |       |       |       |       |       |       |       |       |       |
| (a) By Balls Tester ..                                 | 0.182* | 0.162 | 0.170 | 0.161 | 0.160 | 0.190 | 0.161 | 0.176 | 0.157 | 0.162 |
| (b) By O'Neill Tester ..                               | 0.180* | 0.181 | 0.182 | 0.163 | 0.162 | 0.192 | 0.182 | 0.181 | 0.159 | 0.140 |
| 6. Fibre-Strength per unit fibre-weight per inch ..    | 0.94*  | 1.13  | 1.01  | 0.95  | 0.93  | 1.15  | 1.01  | 1.12  | 0.84  | 0.86  |
| 7. Fibre-Rigidity (millim of an ounce, square-inch) .. | 0.181* | 0.185 | 0.189 | 0.234 | 0.181 | 0.178 | ..    | ..    | ..    | ..    |
| 8. Ribbon-Width (thousandth of an inch).               | 0.06   | 0.04  | 0.07  | 0.09  | 0.65  | 0.68  | ..    | ..    | ..    | ..    |
| 9. Convolutions per inch ..                            | 82     | 90    | 122   | 92    | 87    | 77    | ..    | ..    | ..    | ..    |
| 10. Maturity Test Results (%) :—                       |        |       |       |       |       |       |       |       |       |       |
| (a) Mature ..                                          | ..     | ..    | ..    | ..    | ..    | ..    | 67    | 63    | 61    | 69    |
| (b) Half-mature ..                                     | ..     | ..    | ..    | ..    | ..    | ..    | 15    | 10    | 18    | 18    |
| (c) Immature ..                                        | ..     | ..    | ..    | ..    | ..    | ..    | 18    | 21    | 21    | 13    |

\* Mean of three seasons 1920-20.

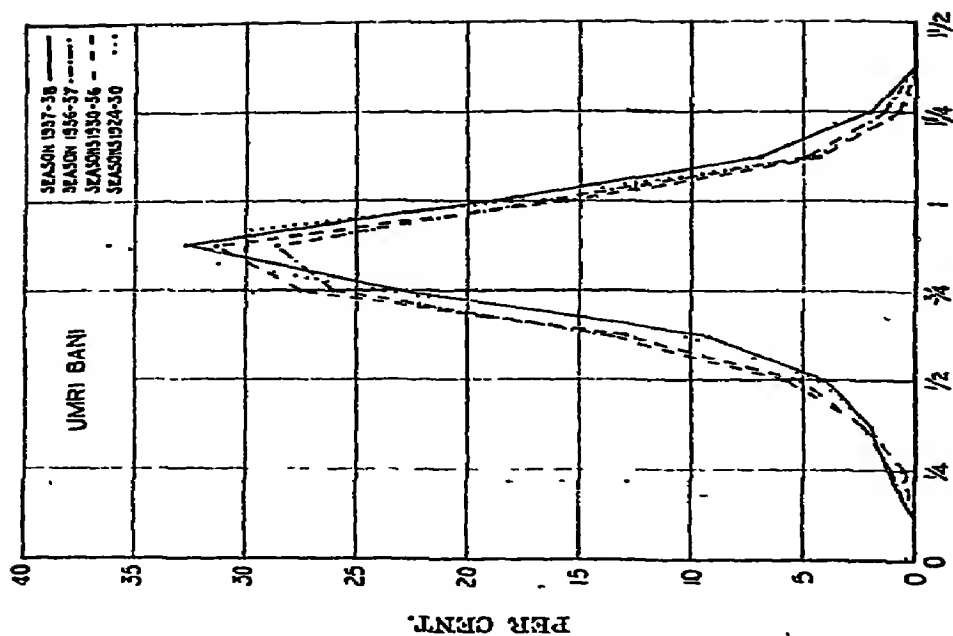


Fig. 15.—Sorter Diagrams for Umri Bani.

## IV.—SPINNING TESTS.

1. *Treatment* :—

(a) *Blow room* :—Upto 1934-35 (inclusive) :—Lattice Feeder, Crighton (twice), Hopper, Scutcher (3 times).

1935-36 onwards :—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

(b) *Card-room* :—Upto 1934-35 (inclusive) :—Card, Drawing (2 heads), Slubber, Inter, Rover, and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards :—Same as above but spun from single hank roving on Ring Frame No. 3 which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

2. *Spinning Master's Report* :—

| —                            | 1928-29.                                  | 1929-30.                                         | 1930-31.                            | 1931-32.                       | 1932-33.                       | 1933-34.          | 1934-35.              | 1935-36.                     | 1936-37.                     | 1937-38.                    |
|------------------------------|-------------------------------------------|--------------------------------------------------|-------------------------------------|--------------------------------|--------------------------------|-------------------|-----------------------|------------------------------|------------------------------|-----------------------------|
| Colour .. .. .               | Creamy-white ..                           | Creamy-white; some-what dull.                    | White to creamy-white; very bright. | White to creamy-white; bright. | White to creamy-white.         | White; brightish. | White; fairly bright. | White to creamy-white.       | White to creamy-white.       | White.                      |
| Cleanliness .. .. .          | Leafy; slightly stained.                  | Too much sand; very fine leaf; a little stained. | A trifle leafy.                     | Slightly stained; leafy.       | Leafy.                         | Somewhat leafy.   | Very leafy.           | Leafy.                       | Leafy with occasional stain. | Leafy.                      |
| Feel .. .. .                 | Good ..                                   | Softish.                                         | Good.                               | Good.                          | Good.                          | Good soft.        | Good.                 | Good smooth.                 | Good smooth.                 | Good soft.                  |
| Ginning and neppiness ..     | Fairly well-ginned.                       | Well-ginned.                                     | Well-ginned.                        | Well-ginned.                   | Well-ginned.                   | Well-ginned.      | Well-ginned.          | A little knotted in ginning. | Well-ginned.                 | A little knotted.           |
| Seeds .. .. .                | 0.55 per cent. complete; some not ginned. | 1 per cent. seeds.                               | ..                                  | ..                             | 1 per cent. ginned & unginned. | ..                | ..                    | ..                           | ..                           | ..                          |
| Card silver .. .. .          | .. ..                                     | Clean and nepp-free.                             | Clean.                              | A little leafy.                | Practically clean.             | Clean.            | Almost clean.         | Almost clean.                | Leafy.                       | A trifle leafy.             |
| Card-web .. .. .             | .. ..                                     | ..                                               | First class; shed a deal of fly.    | Even; nepp-free.               | Good.                          | Even; nepp-free.  | Good.                 | Good.                        | Good.                        | Good; almost free of nepps. |
| Weight of ten flat strips .. | .. ..                                     | ..                                               | Light; 11.3 grams.                  | 15.0 grams.                    | 15.0 grams.                    | 13.0 grams.       | 14.8 grams.           | 12.1 grams.                  | 14.0 grams.                  | 14.5 grams.                 |
| Remarks .. .. .              | .. ..                                     | ..                                               | Staple fairly regular.              | ..                             | Good tenacity.                 | ..                | ..                    | ..                           | ..                           | ..                          |

3. *Spinning Test Details and Results* :—See Table 15 on page 76.

Card Production for Sample No. 82 :—12.0 lb. per hour.

Ring Frame Production for 20's-A, Sample No. 82 :—7.87 oz. per spindle per 10 hours.

## V.—REMARKS.

(i) *Fibre*.—With few exceptions the chief fibre-properties of this cotton show very little seasonal variation. Its fibre-weight per inch is rather low in 1929-30 and high in 1936-37, while its mean fibre-length is somewhat low in the two seasons, 1930-32. The 1937-38 cotton is slightly longer and more regular in length than its predecessor, and has also a somewhat higher proportion of mature fibres.

(ii) *Waste*.—This cotton contains a fair amount of trash and, except in 1930-31 and 1936-37, has given 10-11 per cent. blow-room loss. Its card-room loss generally lies between 8 and 9 per cent.

(iii) *Breakages*.—Yarn breakages in the ring frame are generally few in 20's counts, but fairly numerous in 24's and 30's counts.

(iv) *Yarns*.—The 20's yarns of this cotton are either even or even to fairly even. Upto 1928-29 its yarns were somewhat neppy, but since then there has been an improvement in this respect. The yarn-strength results also show an improvement since that season.

(v) *Conclusions*.—This cotton would decidedly gain by being picked in a cleaner state. The improvement in spinning performance noticed since 1928-29 has been maintained and the 1935-36 sample gave the best results. The following are the highest standard warp counts for which this cotton is suitable in different seasons :—

|            |       |            |       |
|------------|-------|------------|-------|
| 1924-25 .. | 22's. | 1931-32 .. | 27's. |
| 1925-26 .. | 24's. | 1932-33 .. | 28's. |
| 1926-27 .. | 24's. | 1933-34 .. | 29's. |
| 1927-28 .. | 24's. | 1934-35 .. | 30's. |
| 1928-29 .. | 22's. | 1935-36 .. | 34's. |
| 1929-30 .. | 27's. | 1936-37 .. | 30's. |
| 1930-31 .. | 28's. | 1937-38 .. | 33's. |



## 16.—CAMBODIA Co. 2. (Cambodia 440).

## Seasons.

|                            |                            |
|----------------------------|----------------------------|
| 1924-25 (Sample No. 50).   | 1931-32 (Sample No. 1356). |
| 1925-26 (Sample No. 124).  | 1932-33 (Sample No. 1764). |
| 1926-27 (Sample No. 268).  | 1933-34 (Sample No. 2245). |
| 1927-28 (Sample No. 375).  | 1934-35 (Sample No. 2764). |
| 1928-29 (Sample No. 505).  | 1935-36 (Sample No. 3129). |
| 1929-30 (Sample No. 706).  | 1936-37 (Sample No. 3634). |
| 1930-31 (Sample No. 1057). | 1937-38 (Sample No. 4095). |

## I.—AGRICULTURAL DETAILS.

- i) *Botanical species* :—*Gossypium hirsutum*.
- i) *History* :—A pure line strain isolated from a mixed crop of Cambodia cotton grown in 1920-21.
- i) *District of growth* :—Cambodia is grown in parts of South Arcot, Salem, Coimbatore, Trichinopoly, Madura, Ramnad and Tinnevely districts. About half the total crop is grown under irrigation. The particular samples used in these tests have been grown on the Cotton Breeding Station, Coimbatore, excepting the 1935-36 sample which was supplied from the Central Farm, Coimbatore.
- v) *Growing period* :—September to April.
- v) *Soil* :—Red loam.
- i) *Rainfall* :—Average for 15 years : 25.09". Average for 1937-38 : 21.26".
- i) *Temperature* :—Minimum 59° F. in January and maximum 98° F. in March.
- f) *Plant Particulars (Average values)* :—
- (a) Bolls per plant : 6 (spacing : 30" × 9").
- (b) Seeds per boll : 35.
- (c) Weight of seed : 130 milligrammes.
- (d) Weight of lint per seed : 72 milligrammes.
- (e) Ginning percentage : 36.
- e) *Yield of seed-cotton* :—733 lbs. per acre at Cotton Breeding Station, Coimbatore.

e) *Area under cultivation* :—

|            |            |            |               |
|------------|------------|------------|---------------|
| 1928-29 .. | 120 acres. | 1933-34 .. | 47,000 acres. |
| 1929-30 .. | 1,500 "    | 1934-35 .. | 71,870 "      |
| 1930-31 .. | 8,000 "    | 1935-36 .. | 1,38,120 "    |
| 1931-32 .. | 40,000 "   | 1936-37 .. | 1,90,000 "    |
| 1932-33 .. | 42,000 "   | 1937-38 .. | 2,75,000 "    |

## II.—GRADER'S REPORT.

|                     | 1928-29.    | 1929-30.    | 1930-31.       | 1931-32.   | 1932-33.   | 1933-34.    | 1934-35.         | 1935-36.    | 1936-37.             | 1937-38.    |
|---------------------|-------------|-------------|----------------|------------|------------|-------------|------------------|-------------|----------------------|-------------|
| valued under.       | Broach.     | Broach.     | Broach.        | Broach.    | Broach.    | Broach.     | Broach.          | Broach A/M. | Broach.              | Broach.     |
| .. ..               | Fine.       | Superfine.  | Barely fine.   | Fine.      | Fine.      | Fine.       | Fine to S. F.    | Superfine.  | Fully good.          | Superfine.  |
| .. ..               | Creamy.     | White.      | Slight creamy. | Creamy.    | White.     | Creamy.     | Dull white.      | Creamy.     | Dull white, spotted. | Creamy.     |
| gth ..              | 3/8-1 inch. | 1 1/2 inch. | 1 1/8 inch.    | 1 inch.    | 7/8 inch.  | 13/16 inch. | Barely 7/8 inch. | 7/8 inch.   | 29/32 inch.          | 29/32 inch. |
| length ..           | Good.       | Good.       | Good.          | Fair.      | Fair.      | Fair.       | Fair.            | Good.       | Good.                | Good.       |
| .. ..               | Good.       | Good.       | Fair.          | Fair.      | Fair.      | Fair.       | Poor.            | Regular.    | Regular.             | Regular.    |
| ve or below rate .. | Rs. 65 on.  | Rs. 65 on.  | Rs. 65 on.     | Rs. 50 on. | Rs. 20 on. | Rs. 40 on.  | Rs. 45 on.       | Rs. 45 on.  | Rs. 50 on.           | Rs. 70 on.  |
| .. ..               | Rs. 323.    | Rs. 250.    | Rs. 175.       | Rs. 155.   | Rs. 203.   | Rs. 100.    | Rs. 232.         | Rs. 107.    | Rs. 240.             | Rs. 151.    |
| uation ..           | 8-5-29.     | 10-4-30.    | 30-5-31.       | 7-6-32.    | 15-5-33.   | 30-1-34.    | 3-7-35.          | 8-4-36.     | 4-6-37.              | 25-6-38.    |
| .. ..               | ..          | ..          | ..             | ..         | ..         | Harsh.      | ..               | ..          | ..                   | ..          |

## III.—FIBRE PARTICULARS.

## 1. Fibre-Length Distribution (Balls Sorter):—

| Mean group-length in<br>eighths of an inch.            | Percentage. |          |          |          |          |          |          |          |          |          |
|--------------------------------------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|                                                        | 1924-25.    | 1925-26. | 1030-31. | 1031-32. | 1032-33. | 1033-34. | 1034-35. | 1035-36. | 1036-37. | 1037-38. |
| 3                                                      | 0.5         | 0.5      | 2.4      | 2.4      | 0.5      | 0.9      | 0.0      | 1.3      | 0.0      | 0.3      |
| 3                                                      | 2.1         | 1.6      | 3.8      | 4.2      | 1.4      | 2.8      | 2.1      | 2.1      | 2.0      | 1.8      |
| 4                                                      | 3.5         | 3.7      | 7.1      | 7.1      | 3.1      | 4.9      | 3.0      | 4.7      | 3.5      | 2.8      |
| 5                                                      | 0.1         | 0.0      | 6.0      | 6.0      | 6.1      | 8.0      | 0.3      | 8.1      | 6.5      | 3.7      |
| 6                                                      | 10.5        | 13.7     | 11.7     | 13.3     | 12.3     | 13.8     | 11.9     | 15.2     | 12.0     | 9.4      |
| 7                                                      | 21.9        | 20.8     | 22.2     | 25.9     | 21.2     | 23.8     | 21.7     | 27.8     | 22.1     | 18.5     |
| 8                                                      | 33.7        | 29.4     | 31.2     | 30.2     | 30.1     | 28.7     | 28.8     | 28.6     | 30.2     | 31.1     |
| 9                                                      | 17.2        | 13.5     | 16.4     | 13.3     | 20.2     | 13.3     | 17.0     | 10.0     | 18.2     | 22.3     |
| 10                                                     | 4.2         | 3.3      | 5.7      | 3.6      | 4.9      | 2.9      | 5.5      | 2.2      | 4.3      | 6.1      |
| 11                                                     | 0.3         | 0.4      | ..       | ..       | 0.2      | ..       | 2.0      | ..       | 0.6      | 1.8      |
| 12                                                     | ..          | ..       | ..       | ..       | ..       | ..       | 0.3      | ..       | ..       | ..       |
| 2. Fibre-Length (inch)—                                |             |          |          |          |          |          |          |          |          |          |
| (a) By Balls Sorter                                    | 0.92        | 0.90     | 0.92     | 0.90     | 0.93     | 0.88     | 0.92     | 0.87     | 0.92     | 0.93     |
| (b) By Baer Sorter                                     | 0.91        | 0.89     | 0.91     | 0.91     | 0.92     | 0.88     | 0.92     | 0.80     | 0.92     | 0.93     |
| 3. Fibre-Length Irregularity (%)                       | ..          | 17.0     | 19.7     | 18.0     | 18.7     | 22.5     | 19.4     | 19.4     | 19.7     | 17.0     |
| 4. Fibre-Weight per inch (millionth of an ounce).      | 0.157†      | 0.138    | 0.133    | 0.145    | 0.123    | 0.122    | 0.122    | 0.122    | 0.130    | 0.150    |
| 5. Fibre-Strength (oz.)—                               |             |          |          |          |          |          |          |          |          |          |
| (a) By Balls Tester                                    | 0.112*      | 0.110    | 0.110    | 0.113    | 0.091    | 0.095    | 0.120    | 0.121    | 0.117    | 0.124    |
| (b) By O'Neil Tester                                   | 0.110*      | 0.131    | 0.117    | 0.120    | 0.101    | 0.100    | 0.133    | 0.129    | 0.153    | 0.121    |
| 6. Fibre-Strength per unit fibre-weight per inch.      | 0.77*       | 0.91     | 0.88     | 0.80     | 0.75     | 0.80     | 0.90     | 0.81     | 0.93     | 0.82     |
| 7. Fibre-Rigidity (millionth of an ounce, square-inch) | 0.118*      | 0.224    | 0.145    | 0.148    | ..       | ..       | ..       | ..       | ..       | ..       |
| 8. Ribbon-Width (thousandth of an inch)                | 0.62*       | 0.04     | 0.60     | 0.03     | 0.08     | ..       | ..       | ..       | ..       | ..       |
| 9. Convolutions per inch                               | 99*         | 116      | 94       | 87       | 110      | ..       | ..       | ..       | ..       | ..       |
| 10. Maturity Test Results (%)—                         |             |          |          |          |          |          |          |          |          |          |
| (a) Mature                                             | ..          | ..       | ..       | ..       | ..       | ..       | 40       | 46       | 50       | 48       |
| (b) Half-mature                                        | ..          | ..       | ..       | ..       | ..       | ..       | 15       | 27       | 21       | 18       |
| (c) Immature                                           | ..          | ..       | ..       | ..       | ..       | ..       | 45       | 27       | 29       | 34       |

\* Mean of two seasons, 1927-29. † Mean of four seasons, 1924-25 and 1928-29.

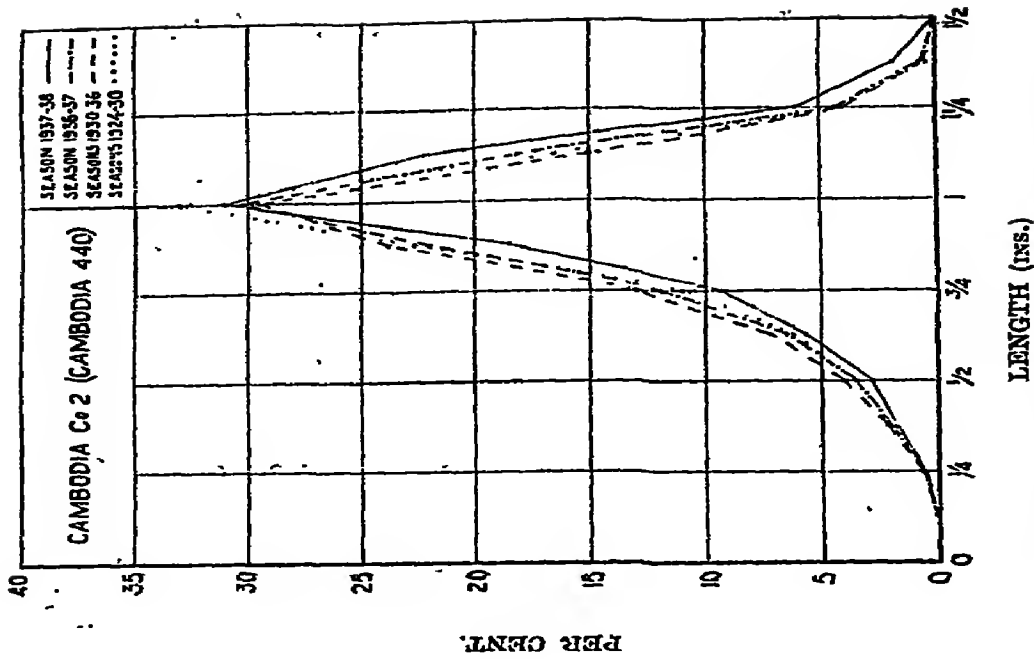


Fig. 10.—Sorter Diagrams for Cambodia Co. 2 (Cambodia 140).

## IV.—SPINNING TESTS.

*Treatment :—*

(a) *Blow-room.*—1924-25 :—Lattice feeder, Crighton (once), Hopper, Scutcher (3 times). 1925-26 to 1927-28 (inclusive) :—Same as above but not passed through Lattice feeder. 1928-29 and 1929-30 (inclusive) :—Same as for 1924-25. 1930-31 to 1933-34 (inclusive) :—Same as above but two passages through Crighton.

1934-35 onwards :—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

(b) *Card-room.*—Upto 1934-35 (inclusive) :—Card, Drawing (2 heads), Slubber, Inter, Rover, and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards :—Same as above but spun from single hank roving on Ring Frame No. 3 which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

*Spinning Master's Report :—*

| Season.           | 1928-29.                                     | 1929-30.                                                                      | 1930-31.       | 1931-32.          | 1932-33.                                                | 1933-34.                     | 1934-35.               | 1935-36.                       | 1936-37.            | 1937-38.            |
|-------------------|----------------------------------------------|-------------------------------------------------------------------------------|----------------|-------------------|---------------------------------------------------------|------------------------------|------------------------|--------------------------------|---------------------|---------------------|
| .. ..             | Creamy-white to creamy.                      | Creamy-white; bright.                                                         | Creamy.        | Creamy-white.     | Creamy-white to creamy.                                 | Creamy-white; fairly bright. | White to creamy-white. | White to creamy-white; bright. | Creamy-white.       | Creamy-white.       |
| ness ..           | Very clean.                                  | Perfectly clean.                                                              | Fairly clean.  | Clean.            | Fairly clean.                                           | Clean.                       | Fairly clean.          | Clean.                         | Clean.              | Very clean.         |
| .. ..             | Good.                                        | Very good.                                                                    | Good-soft.     | Soft.             | Light soft.                                             | Good.                        | Fairly clean.          | Good bodied.                   | Good bodied.        | Good soft.          |
| g and nopy.<br>s. | Well-ginned except for a little knotty.      | Well-ginned except for knottiness of the lint.                                | Well-ginned.   | Somewhat knotted. | Well-ginned apart from a slight knottiness of material. | Well-ginned.                 | A little knotted.      | Well-ginned.                   | Well-ginned.        | Fair.               |
| .. ..             | ..                                           | A little cut seeds.                                                           | ..             | ..                | ..                                                      | ..                           | ..                     | ..                             | ..                  | ..                  |
| iver ..           | ..                                           | ..                                                                            | Clean.         | Clean.            | Clean.                                                  | Clean.                       | Clean.                 | Clean.                         | Good and clean.     | Clean.              |
| ob ..             | ..                                           | ..                                                                            | A trifle nopy. | Fairly good.      | Good.                                                   | Even.                        | Somewhat nopy.         | Even and nopy-free.            | Good and nopy-free. | Good and nopy-free. |
| of ten flat       | ..                                           | ..                                                                            | 15.3 grams.    | 18.0 grams.       | 18.0 grams.                                             | 17.6 grams.                  | 22.7 grams.            | 11.6 grams.                    | 10.8 grams.         | 14.6 grams.         |
| cs ..             | Fine and regular staple; a very good sample. | Staple fine, regular in length and of good strength; a very desirable cotton. | ..             | ..                | ..                                                      | ..                           | ..                     | ..                             | ..                  | ..                  |

*Spinning Test Details and Results :—*See Table 16 on page 80.

## V.—REMARKS.

(i) *Fibre.*—The mean fibre-length does not show much seasonal variation since 1930 except in 1933-34 and 1935-36 when it was rather low. The fibre-length irregularity is generally on the high side. The mean fibre-weight per inch is rather low in three seasons, 1932-35. The fibre-strength and the fibre-strength per unit fibre-weight per inch are variable, the former being unusually low in 1932-33 and 1933-34 and the latter in 1933. The 1937-38 sample is slightly longer and more regular in length than its immediate predecessor, but is coarser, possesses a lower intrinsic strength and a larger percentage of immature hairs.

(ii) *Waste.*—Samples of this cotton are generally quite clean, those received since 1931, however, are on the whole, dirtier than the earlier ones. Its card-room loss is generally on the high side, lying usually in the neighbourhood of 9 per cent.

(iii) *Breakages.*—Yarn breakages in the ring frame are usually few in 20's and 30's counts, fairly numerous in 34's counts. They were, however, fairly numerous in 30's and 34's counts of the 1932-33 cotton.

(iv) *Yarns.*—This cotton usually gives even 20's and even to fairly even or fairly regular 30's, the 1935-36 yarns being rather more even than the average. Its yarns are inclined to be neppy, though a distinct improvement is noticeable since 1934-35, which has been maintained upto the present. The yarn strength results vary considerably with the season, being good in 1927-28, 1936-37 and 1937-38, better still in 1926-27 but poor in 1925-26 and 1932-33.

(v) *Conclusions.*—The following are the highest standard warp counts for which this cotton is suitable in the different seasons :—

|            |       |            |       |            |       |
|------------|-------|------------|-------|------------|-------|
| 1924-25 .. | 29's. | 1929-30 .. | 28's. | 1934-35 .. | 30's. |
| 1925-26 .. | 25's. | 1930-31 .. | 29's. | 1935-36 .. | 30's. |
| 1926-27 .. | 37's. | 1931-32 .. | 27's. | 1936-37 .. | 33's. |
| 1927-28 .. | 33's. | 1932-33 .. | 24's. | 1937-38 .. | 33's. |
| 1928-29 .. | 26's. | 1933-34 .. | 26's. |            |       |





**17.—NANDYAL 14 (Northerns).**

| <i>Seasons.</i>           | <i>Seasons.</i>            | <i>Seasons.</i>            |
|---------------------------|----------------------------|----------------------------|
| 1923-24 (Sample No. 73).  | 1928-29 (Sample No. 506).  | 1933-34 (Sample No. 2246). |
| 1924-25 (Sample No. 74).  | 1929-30 (Sample No. 726).  | 1934-35 (Sample No. 2767). |
| 1925-26 (Sample No. 162). | 1930-31 (Sample No. 1044). | 1935-36 (Sample No. 3175). |
| 1926-27 (Sample No. 273). | 1931-32 (Sample No. 1334). | 1936-37 (Sample No. 3568). |
| 1927-28 (Sample No. 378). | 1932-33 (Sample No. 1808). | 1937-38 (Sample No. 4103). |

### I.—AGRICULTURAL DETAILS.

*Botanical species* :—*Gossypium indicum*.

**History:**—From the commercial type known as "White Northerns," selection work was begun at Nandyal in 1907-08; comparative trials were started in 1914-15, and general distribution of Nandyal 14 began in 1918.

*District of growth* :—Nandyal (Kurnool district). The particular samples used in these tests have been grown at the Agricultural Research station, Nandyal.

**Growing period** :—Usually sown from the middle to the end of August, and picked from January to April. The sowing season in 1932-33 was late by three to four weeks. The earlier sowings in 1933-34 just preceded heavy downpour of rain resulting in the total failure of germination and sowings had to be done again. In 1934-35, sowings were done in right time and the rains were well distributed during the period of growth ; in 1935-36, sowings were delayed by two weeks due to heavy rains in August and first week of September ; the sowing season was normal (3rd week of August) in 1936-37. Sowing late by 2 weeks in 1937-38; comparatively less shedding ; no rainfall during flowering from November to January, red leaf disease was rare.

**Soil** :—Stiff black cotton soil, slightly alkaline at Nandyal ; but seed is distributed for red and mixed soils of clay loams, for which it is better suited.

**Rainfall** :—25-30 inches annually ; a little over 20 inches in 1929-30, but well distributed so that the total return per acre was almost a record figure. The average rainfall in 1930-31 was 29 inches but rains for sowing the crop and those during the north-east monsoon period were so ill-distributed that cotton cultivation during the year was of the nature of a gamble. During 1931-32, about 31 inches. About 22 inches in 1932-33. This deficiency was mostly due to poor showers during the south-west monsoon period. The general cotton yield was however satisfactory. About 33 inches in 1933-34. The excess was due to heavy showers in the south-west monsoon. The general yield was not quite satisfactory. 27" in 1934-35, was well distributed and was ideal for cotton ; the yields were good. 31.5" in 1935-36 ; only 23 inches in 1936-37 ; 28" in 1937-38 : the season was normal for cotton on the Farm.

Temperature:—Mean Minimum 72° F.; Range: 63° F.—80° F.  
 „ Maximum 95° F.; Range: 86° F.—105° F.

*Plant Particulars* (Average values):—

- (a) Bolls per plant: 27 (spacing : 18" × 9").  
(b) Seeds per boll: 21.  
(c) Weight of seed: 46 milligrammes.  
(d) Weight of lint per seed: 14 milligrammes.  
(e) Ginning percentage: 23.

*Yield of seed-cotton*:—200 lbs. per acre in 1928-29, 568 lbs. during 1929-30 (rainfall distribution ideal), 273 lbs. in 1930-31 and 252 lbs. in 1931-32. In the bulk field, the yield per acre was 186 lbs. in 1931-32, 243 lbs. in the Farm and 216 lbs. in the bulk field per acre during 1932-33. In 1933-34, the yield was 170 lbs. only due to abnormal rainfall, red leaf disease and poor germination; 340 lbs. in 1934-35; 180 lbs. in 1935-36 in the Farm; 250 lbs. in 1936-37; 220 lbs. (bulk) in 1937-38.

*Area under cultivation :—*

| Area under cultivation. |               | 1927-28 .. 11,000 acres. |               | 1931-32 .. 27,800 acres. |               | 1935-36 .. 2,312 acres. |              |
|-------------------------|---------------|--------------------------|---------------|--------------------------|---------------|-------------------------|--------------|
| 4 ..                    | 20,550 acres. | 1927-28 ..               | 11,000 acres. | 1931-32 ..               | 27,800 acres. | 1935-36 ..              | 2,312 acres. |
| 5 ..                    | 20,180 "      | 1928-29 ..               | 23,000 "      | 1932-33 ..               | 10,550 "      | 1936-37 ..              | 3,925 "      |
| 6 ..                    | 12,700 "      | 1929-30 ..               | 27,300 "      | 1933-34 ..               | 3,300 "       | 1937-38 ..              | 4,360 "      |
| 7 ..                    | 17,730 "      | 1930-31 ..               | 29,500 "      | 1934-35 ..               | 5,500 "       |                         |              |

## II.—GRADER'S REPORT.

|               | 1928-29.   | 1929-30.         | 1930-31.   | 1931-32.                          | 1932-33.   | 1933-34.   | 1934-35.     | 1935-36.                      | 1936-37.                                  | 1937-38.                                             |
|---------------|------------|------------------|------------|-----------------------------------|------------|------------|--------------|-------------------------------|-------------------------------------------|------------------------------------------------------|
| valued under. | Branch.    | Kumta.           | Branch.    | Branch/<br>Western.<br>Superfine. | Branch.    | Branch.    | Branch.      | Branch/<br>July<br>Superfino. | Branch/<br>A/M.<br>Fully good<br>to fine. | Branch.                                              |
| " ..          | Fine.      | Extra Superfine. | Superfine. | White.                            | Fine.      | Superfine. | Superfine.   | White.                        | Greyish.                                  | Fully good.                                          |
| " ..          | White.     | White.           | Reddish.   | White.                            | White.     | White.     | White.       | White.                        | 13/16 inch.                               | Creamy.                                              |
| length ..     | 7-8 in.    | 1 1/2 in.        | 15/16 in.  | One in.                           | 31/32 in.  | 15/16 in.  | Full 7/8 in. | 15/16 in.                     | Good.                                     | 13/16 inch.                                          |
| length ..     | Good.      | Fair.            | Fair.      | Fair.                             | Fair.      | Fair.      | Very good.   | Good.                         | Somewhat<br>neppy and<br>irregular.       | Poor.                                                |
| " ..          | Fair.      | Fair.            | Fair.      | Fair.                             | Fair.      | Irregular. | Regular.     | Regular.                      |                                           | Somewhat<br>wasty.                                   |
| ave or below  |            |                  |            |                                   |            |            |              |                               |                                           |                                                      |
| rate ..       | Rs. 80 on. | Rs. 80 on.       | Rs. 60 on. | Rs. 50 on.                        | Rs. 45 on. | Rs. 60 on. | Rs. 70 on.   | Rs. 45 on.                    | Rs. 30 on.                                | Rs. 15 on.                                           |
| " ..          | Rs. 323.   | Rs. 300.         | Rs. 190.   | Rs. 160.                          | Rs. 214.   | Rs. 190.   | Rs. 237.     | Rs. 190.                      | Rs. 227.                                  | Rs. 158.                                             |
| valuation ..  | 8-5-20.    | 24-6-30.         | 11-6-31.   | 16-5-32.                          | 5-7-33.    | 30-4-34.   | 1-7-35.      | 23-6-36.                      | 1-6-37.                                   | 9-7-38.                                              |
| " ..          | " ..       | " ..             | " ..       | " ..                              | " ..       | " ..       | " ..         | Somewhat<br>wasty.            | Somewhat<br>badly<br>ginned.              | Sample ap-<br>pear to be<br>drawn from<br>hard side. |



### III.—FIBRE PARTICULARS.

| 1. Fibre-Length Distribution (Balls Sorter).—           |          |          |          |          |          |          |          |          |          |          |                |
|---------------------------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------------|
| Percentage.                                             |          |          |          |          |          |          |          |          |          |          |                |
| Mean group-length in eighths of an inch.                |          |          |          |          |          |          |          |          |          |          |                |
|                                                         | 1924-29. | 1929-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |                |
| 2                                                       | 0.1      | 0.5      | 2.0      | 0.4      | 0.2      | 0.2      | 0.1      | 0.4      | 0.6      | 0.4      | SEASON 1937-38 |
| 3                                                       | 1.6      | 1.3      | 2.6      | 2.6      | 1.1      | 1.7      | 1.3      | 1.3      | 1.8      | 1.1      | SEASON 1936-37 |
| 4                                                       | 3.1      | 2.6      | 4.1      | 4.6      | 2.6      | 2.7      | 2.1      | 2.7      | 4.2      | 3.6      | SEASON 1935-36 |
| 5                                                       | 6.6      | 6.0      | 9.0      | 9.3      | 1.7      | 0.5      | 4.6      | 0.0      | 0.0      | 0.0      | SEASON 1934-35 |
| 6                                                       | 12.0     | 12.0     | 18.6     | 18.2     | 12.0     | 16.4     | 0.8      | 13.0     | 17.3     | 11.1     |                |
| 7                                                       | 20.5     | 21.8     | 35.3     | 32.1     | 28.1     | 31.2     | 22.7     | 25.8     | 30.8     | 25.0     |                |
| 8                                                       | 31.3     | 33.7     | 41.6     | 34.5     | 34.4     | 31.2     | 34.4     | 32.5     | 27.2     | 33.3     |                |
| 9                                                       | 14.6     | 13.1     | 6.6      | 6.0      | 14.5     | 0.7      | 21.0     | 11.2     | 7.6      | 12.0     |                |
| 10                                                      | 2.3      | 4.4      | 0.6      | 1.6      | 2.4      | 1.1      | 3.7      | 3.5      | 1.4      | 2.1      |                |
| 11                                                      | ..       | 1.6      | ..       | ..       | ..       | ..       | 0.3      | 0.6      | 0.2      | ..       |                |
| 2. Fibre-Length (inch).—                                |          |          |          |          |          |          |          |          |          |          |                |
| (a) By Balls Sorter                                     | 0.91     | 0.92     | 0.85     | 0.83     | 0.92     | 0.80     | 0.95     | 0.92     | 0.80     | 0.90     |                |
| (b) By Baller Sorter                                    | 0.80     | 0.91     | 0.88     | 0.83     | 0.90     | 0.80     | 0.93     | 0.91     | 0.87     | 0.80     |                |
| 3. Fibre-Length Irregularity (%)                        | ..       | 15.0     | 14.7     | 16.4     | 13.6     | 13.6     | 14.2     | 16.0     | 16.1     | 18.2     |                |
| 4. Fibre-Weight per inch (millimoth of an ounce)        | 0.180    | 0.160    | 0.167    | 0.187    | 0.156    | 0.163    | 0.171    | 0.133    | 0.163    | 0.171    |                |
| 5. Fibre-Strength (oz.)—                                |          |          |          |          |          |          |          |          |          |          |                |
| (a) By Balls Tester                                     | 0.234*   | 0.231    | 0.208    | 0.230    | 0.215    | 0.290    | 0.214    | 0.202    | 0.233    | 0.223    |                |
| (b) By O'Neill Tester                                   | 0.225*   | 0.231    | 0.213    | 0.223    | 0.229    | 0.223    | 0.236    | 0.222    | 0.220    | 0.208    |                |
| 6. Fibre-Strength per unit fibre-weight per inch.       | 1.20*    | 1.38     | 1.25     | 1.21     | 1.42     | 1.36     | 1.32     | 1.39     | 1.30     | 1.26     |                |
| 7. Fibre-Rigidity (millimoth of an ounce, square inch). | 0.163*   | 0.109    | 0.137    | 0.100    | ..       | ..       | ..       | ..       | ..       | ..       |                |
| 8. Ribbon-Width (thousandth of an inch)                 | 0.60     | 0.65     | 0.67     | 0.64     | 0.67     | ..       | ..       | ..       | ..       | ..       |                |
| 9. Convolution per inch                                 | 67       | 70       | 67       | 60       | 80       | ..       | ..       | ..       | ..       | ..       |                |
| 10. Maturity Test Results (%)—                          |          |          |          |          |          |          |          |          |          |          |                |
| (a) Mature                                              | ..       | ..       | ..       | ..       | ..       | ..       | 81       | 84       | 70       | 78       |                |
| (b) Half-mature                                         | ..       | ..       | ..       | ..       | ..       | ..       | 23       | 22       | 11       | 9        |                |
| (c) Immature                                            | ..       | ..       | ..       | ..       | ..       | ..       | 13       | 14       | 13       | 13       |                |

\* Mean of three seasons, 1929-29.

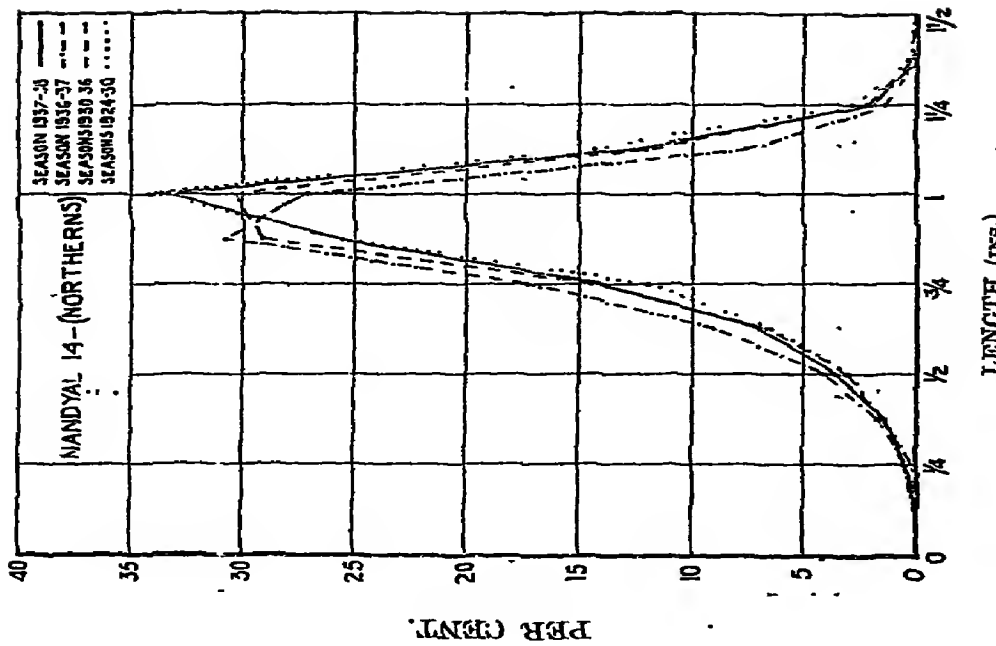


Fig. 17.—Sorter Diagrams for Nandyal 14—(Northern).

## IV.—SPINNING TESTS.

1. *Treatment* :—

(a) *Blow-room*.—1923-24, 1924-25, 1926-27 (second lot), 1932-33 and 1933-34 cottons : Lattice feeder, Crighton (twice), Hopper, Scutcher (3 times). The 1925-26 cotton and the first lot of 1926-27 cotton were passed direct through the Crighton (twice); in other seasons, these cottons were passed through the Lattice feeder, but once only through the Crighton.

1934-35 onwards :—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

(b) *Card-room*.—Upto 1934-35 (inclusive) :—Card, Drawing (2 heads), Slubber, Inter, Rover, and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards :—As above but spun from single hank roving on Ring Frame No. 3, which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

2. *Spinning Master's Report* :—

| Season.                           | 1928-29.                                  | 1929-30.                                                        | 1930-31.                                  | 1931-32.                       | 1932-33.               | 1933-34.         | 1934-35.     | 1935-36.            | 1936-37.               | 1937-38.               |
|-----------------------------------|-------------------------------------------|-----------------------------------------------------------------|-------------------------------------------|--------------------------------|------------------------|------------------|--------------|---------------------|------------------------|------------------------|
| Colour .. .. .                    | White to creamy-white; very bright.       | White; very bright.                                             | Creamy-white; bright.                     | White to creamy-white; bright. | White to creamy-white. | White.           | White.       | White; brightish.   | White to creamy-white. | White to creamy-white. |
| Cleanliness .. .. .               | Perfectly clean.                          | Perfectly clean.                                                | Very clean.                               | Very clean.                    | Clean.                 | Very clean.      | Clean.       | Clean.              | Fairly clean.          | A little leafy.        |
| Feel .. .. .                      | Full-bodied.                              | Good soft feel with plenty of cling.                            | Good soft.                                | Good soft.                     | Good soft.             | Good.            | Good.        | Good bodied.        | Good soft.             | Soft.                  |
| Glaning and neppiness .. .. .     | Well-ginned.                              | Well-ginned.                                                    | Well-ginned.                              | Well-ginned.                   | Somewhat knotted.      | Well-ginned.     | Well-ginned. | Well-ginned.        | Well-ginned.           | Well-ginned.           |
| Seeds .. .. .                     | ..                                        | Few partly ginned seeds present.                                | Some cut and partly ginned seeds present. | ..                             | ..                     | ..               | ..           | ..                  | ..                     | ..                     |
| Card-silver .. .. .               | ..                                        | ..                                                              | Clean.                                    | Clean.                         | Clean.                 | Clean.           | Clean.       | Clean.              | Good.                  | Clean.                 |
| Card-web .. .. .                  | ..                                        | ..                                                              | Very good.                                | Good.                          | Good.                  | Even; nepp-free. | ..           | Even and nepp-free. | Good.                  | Neppy.                 |
| Weight of ten flat strips .. .. . | ..                                        | ..                                                              | 13.7 grams.                               | 13.7 grams.                    | 18.4 grams.            | 14.6 grams.      | 10.7 grams.  | 11.7 grams.         | 12.5 grams.            | 10.7 grams.            |
| Remarks .. .. .                   | A very desirable sample in every respect. | A staple strong and regular in length, a very desirable cotton. | ..                                        | ..                             | ..                     | ..               | ..           | ..                  | ..                     | ..                     |

3. *Spinning Test Details and Results* :—See Table 17, page 84.

## V.—REMARKS.

(i) *Fibre*.—With very few exceptions the fibre-properties of this cotton show remarkably little variation in the different seasons. The mean fibre-length is rather low in the two seasons, 1930-32 and in 1936-37 and higher than the average in 1934-35. The mean fibre-weight per inch has shown a tendency to decrease as compared with the earlier seasons and is low in 1932-33 and again in 1935-36. The 1932-33 and 1933-34 cottons are somewhat more regular in staple than the others. The 1937-38 cotton is slightly longer but weaker than its predecessor; otherwise it resembles it in fibre-properties.

(ii) *Waste*.—Samples of this cotton have shown considerable improvement in cleanliness since 1928-29. The card-room loss does not vary much, lying generally in the neighbourhood of 8 per cent. though it was somewhat higher for the 1932-33, the 1934-35 and the 1937-38 samples.

(iii) *Breakages*.—Yarn breakages in the ring frame are fairly numerous in 20's and 30's counts and occasionally numerous in 34's counts. The 1937-38 sample gave fairly numerous breakages in 40's counts.

(iv) *Yarns*.—Yarns spun from this cotton have given variable results as regards evenness and neppiness in the different seasons. Usually they are very even to even in 20's and even to fairly even in 30's, but those of 1930-31, 1931-32, 1934-35 and 1935-36 seasons are not so even. They are inclined to be rather neppy, those of 1928-29 and 1930-31 being poorer than the others in this respect. The yarn-strength results did not show much variation till 1931-32 but since then a good improvement is noticeable which was maintained upto the 1936-37 season, the current season's sample showing a falling off.

(v) *Conclusion*.—The following are the highest standard warp counts for which this cotton is adjudged suitable in the different seasons :—

|            |       |            |       |            |       |
|------------|-------|------------|-------|------------|-------|
| 1923-24 .. | 34's. | 1928-29 .. | 31's. | 1933-34 .. | 37's. |
| 1924-25 .. | 32's. | 1929-30 .. | 35's. | 1934-35 .. | 40's. |
| 1925-26 .. | 32's. | 1930-31 .. | 35's. | 1935-36 .. | 40's. |
| 1926-27 .. | 34's. | 1931-32 .. | 30's. | 1936-37 .. | 42's. |
| 1927-28 .. | 31's. | 1932-33 .. | 37's. | 1937-38 .. | 35's. |

Slubber .. 0.69 .. 20 .. 3/0 .. 20B .. 10,425 r.p.m.  
 Inter .. 1.62 .. 30 .. 7/0 .. 30 .. 10,450 r.p.m.  
 Rover .. 4.82 .. 40 .. 12/0 .. 40 .. 9,175 r.p.m.

| Sample No. | Season. | Date of Spinning. | Counts Monthly. | WASTE PERCENTAGES. |                 |                | RING FRAME PARTICULARS.* |                                           |                             |        |                 | YARN TEST RESULTS. |               |                   |                         |                |                             |                  |                     |         |                 | Temperature above room. (°F.) | Relative Humidity. (%) | Testing Room. |                  |                      |                |                            |                 |                 |
|------------|---------|-------------------|-----------------|--------------------|-----------------|----------------|--------------------------|-------------------------------------------|-----------------------------|--------|-----------------|--------------------|---------------|-------------------|-------------------------|----------------|-----------------------------|------------------|---------------------|---------|-----------------|-------------------------------|------------------------|---------------|------------------|----------------------|----------------|----------------------------|-----------------|-----------------|
|            |         |                   |                 | Blow Room Loss.    | Card Room Loss. | Spinning Loss. | Total Loss.              | Yarn Breakages per 100 spindles per hour. | Front Roller Speed R. P. M. | Draft. | Turns per Inch. | L.T.I.             |               |                   | BALISTIC.               |                |                             | SINGLE TIME.     |                     |         |                 |                               |                        |               |                  |                      |                |                            |                 |                 |
|            |         |                   |                 |                    |                 |                |                          |                                           |                             |        |                 | Counts Actual.     | Strength lbs. | Irregularity (%). | Count-Strength Product. | Counts Actual. | Work of Rupture (Inch-lbs.) | Irregularity (%) | Count-Work Product. | Counts. | Strength (ozs.) |                               |                        |               | Irregularity (%) | Weakness Percentage. | Extension (%). | Extension Irregularity (%) | Evenness Class. | Steps per yard. |
| 500        | 1923-28 | 2-1-20            | 20A             | 7.7                | 8.0             | 0.3            | 16.8                     | 20                                        | 192                         | 4.4    | 10.85           | 7.4                | 7.4           | 1.717             | 1.717                   | 1.123          | 7.4                         | 1.717            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 86                         | 70              | 07              |
| 501        | 1928-30 | 3-1-20            | "               | 4.8                | 8.0             | 0.3            | 13.1                     | 17                                        | 192                         | 4.35   | 10.85           | 7.4                | 7.4           | 1.910             | 1.910                   | 1.123          | 7.4                         | 1.910            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 91                         | 06              | 03              |
| 502        | 1928-30 | 3-1-20            | "               | 4.8                | 7.0             | 0.1            | 12.9                     | 10                                        | 192                         | 4.73   | 10.85           | 7.4                | 7.4           | 1.810             | 1.810                   | 1.123          | 7.4                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 92                         | 03              | 03              |
| 1044       | 1930-31 | 5-5-31            | "               | 5.3                | 7.0             | 0.1            | 12.4                     | 12                                        | 197                         | 4.73   | 10.85           | 7.8                | 7.8           | 1.810             | 1.810                   | 1.123          | 7.8                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 91                         | 06              | 03              |
| 1334       | 1931-32 | 10-5-32           | "               | 4.7                | 7.4             | 0.0            | 12.1                     | 20                                        | 200                         | 4.35   | 10.85           | 7.8                | 7.8           | 1.810             | 1.810                   | 1.123          | 7.8                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 93                         | 03              | 03              |
| 1808       | 1932-33 | 30-0-33           | "               | 4.7                | 7.4             | 0.0            | 12.1                     | 34                                        | 200                         | 4.35   | 10.85           | 7.8                | 7.8           | 1.810             | 1.810                   | 1.123          | 7.8                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 93                         | 03              | 03              |
| 2240       | 1933-34 | 28-4-34           | "               | 4.8                | 7.8             | 0.4            | 12.8                     | 32                                        | 201                         | 4.30   | 10.85           | 8.0                | 8.0           | 1.810             | 1.810                   | 1.123          | 8.0                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 88                         | 70              | 78              |
| 2707       | 1934-35 | 12-7-35           | "               | 4.5                | 7.8             | 0.4            | 12.7                     | 32                                        | 201                         | 4.30   | 10.85           | 8.0                | 8.0           | 1.810             | 1.810                   | 1.123          | 8.0                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 87                         | 08              | 74              |
| 3175       | 1935-36 | 16-5-30           | "               | 4.5                | 7.8             | 0.4            | 12.7                     | 32                                        | 201                         | 4.30   | 10.85           | 8.0                | 8.0           | 1.810             | 1.810                   | 1.123          | 8.0                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 87                         | 08              | 74              |
| 3608       | 1936-37 | 6-5-37            | "               | 4.5                | 7.8             | 0.4            | 12.7                     | 32                                        | 201                         | 4.30   | 10.85           | 8.0                | 8.0           | 1.810             | 1.810                   | 1.123          | 8.0                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 87                         | 08              | 74              |
| 4103/1     | 1937-38 | 25-0-38           | "               | 4.2                | 11.1            | 0.9            | 16.2                     | 9                                         | 211                         | 4.13   | 10.85           | 8.0                | 8.0           | 1.810             | 1.810                   | 1.123          | 8.0                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 85                         | 72              | 70              |
| 4103/2     | 1937-38 | 25-0-38           | "               | 4.0                | 10.3            | 0.3            | 14.6                     | 9                                         | 208                         | 4.17   | 10.85           | 8.0                | 8.0           | 1.810             | 1.810                   | 1.123          | 8.0                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 88                         | 72              | 70              |
| 720        | 1939-40 | 5-5-30            | 20B             | ..                 | ..              | ..             | ..                       | 10                                        | 200                         | 4.73   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           | 6.7                    | 7.0           | 3                | 1.8                  | 17.3           | 92                         | 01              | 02              |
| 1044       | 1939-41 | 6-5-31            | "               | ..                 | ..              | ..             | ..                       | 10                                        | 193                         | 4.44   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           | 6.7                    | 7.0           | 3                | 1.8                  | 17.3           | 92                         | 01              | 02              |
| 1304       | 1939-41 | 6-5-31            | "               | ..                 | ..              | ..             | ..                       | 10                                        | 193                         | 4.44   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           | 6.7                    | 7.0           | 3                | 1.8                  | 17.3           | 92                         | 01              | 02              |
| 1808       | 1939-41 | 6-5-31            | "               | ..                 | ..              | ..             | ..                       | 10                                        | 193                         | 4.44   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           | 6.7                    | 7.0           | 3                | 1.8                  | 17.3           | 92                         | 01              | 02              |
| 2240       | 1939-41 | 6-5-31            | "               | ..                 | ..              | ..             | ..                       | 10                                        | 193                         | 4.44   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           | 6.7                    | 7.0           | 3                | 1.8                  | 17.3           | 92                         | 01              | 02              |
| 2707       | 1939-41 | 6-5-31            | "               | ..                 | ..              | ..             | ..                       | 10                                        | 193                         | 4.44   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           | 6.7                    | 7.0           | 3                | 1.8                  | 17.3           | 92                         | 01              | 02              |
| 3175       | 1939-41 | 6-5-31            | "               | ..                 | ..              | ..             | ..                       | 10                                        | 193                         | 4.44   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           | 6.7                    | 7.0           | 3                | 1.8                  | 17.3           | 92                         | 01              | 02              |
| 3608       | 1939-41 | 6-5-31            | "               | ..                 | ..              | ..             | ..                       | 10                                        | 193                         | 4.44   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           | 6.7                    | 7.0           | 3                | 1.8                  | 17.3           | 92                         | 01              | 02              |
| 4103/1     | 1939-41 | 6-5-31            | "               | ..                 | ..              | ..             | ..                       | 10                                        | 193                         | 4.44   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           | 6.7                    | 7.0           | 3                | 1.8                  | 17.3           | 92                         | 01              | 02              |
| 4103/2     | 1939-41 | 6-5-31            | "               | ..                 | ..              | ..             | ..                       | 10                                        | 193                         | 4.44   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           | 6.7                    | 7.0           | 3                | 1.8                  | 17.3           | 92                         | 01              | 02              |
| 500        | 1923-28 | 2-1-20            | 20              | ..                 | ..              | ..             | ..                       | 10                                        | 148                         | 0.91   | 21.80           | 7.0                | 7.0           | 1.540             | 30.0                    | 80.0           | 7.0                         | 1.540            | 30.0                | 7.7     | 12.3            | 1.0                           | 5.0                    | 1.0           | 4                | 1.7                  | 21.0           | 85                         | 70              | 07              |
| 501        | 1928-30 | 3-1-20            | "               | 4.8                | 8.0             | 0.3            | 13.1                     | 17                                        | 192                         | 4.35   | 10.85           | 7.4                | 7.4           | 1.910             | 1.910                   | 1.123          | 7.4                         | 1.910            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 91                         | 06              | 03              |
| 502        | 1928-30 | 3-1-20            | "               | 4.8                | 7.0             | 0.1            | 12.9                     | 10                                        | 192                         | 4.73   | 10.85           | 7.4                | 7.4           | 1.810             | 1.810                   | 1.123          | 7.4                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 92                         | 03              | 03              |
| 1044       | 1930-31 | 5-5-31            | "               | 5.3                | 7.0             | 0.1            | 12.4                     | 12                                        | 197                         | 4.73   | 10.85           | 7.8                | 7.8           | 1.810             | 1.810                   | 1.123          | 7.8                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 91                         | 06              | 03              |
| 1304       | 1930-31 | 5-5-31            | "               | 4.7                | 7.4             | 0.0            | 12.1                     | 20                                        | 200                         | 4.35   | 10.85           | 7.8                | 7.8           | 1.810             | 1.810                   | 1.123          | 7.8                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 93                         | 03              | 03              |
| 1808       | 1932-33 | 10-0-33           | "               | 4.7                | 7.4             | 0.0            | 12.1                     | 34                                        | 200                         | 4.35   | 10.85           | 7.8                | 7.8           | 1.810             | 1.810                   | 1.123          | 7.8                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 93                         | 03              | 03              |
| 2240       | 1933-34 | 28-4-34           | "               | 4.8                | 7.8             | 0.4            | 12.8                     | 32                                        | 201                         | 4.30   | 10.85           | 8.0                | 8.0           | 1.810             | 1.810                   | 1.123          | 8.0                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 88                         | 70              | 78              |
| 2707       | 1934-35 | 12-7-35           | "               | 4.5                | 7.8             | 0.4            | 12.7                     | 32                                        | 201                         | 4.30   | 10.85           | 8.0                | 8.0           | 1.810             | 1.810                   | 1.123          | 8.0                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 87                         | 08              | 74              |
| 3175       | 1935-36 | 16-5-30           | "               | 4.5                | 7.8             | 0.4            | 12.7                     | 32                                        | 201                         | 4.30   | 10.85           | 8.0                | 8.0           | 1.810             | 1.810                   | 1.123          | 8.0                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 87                         | 08              | 74              |
| 3608       | 1936-37 | 6-5-37            | "               | 4.5                | 7.8             | 0.4            | 12.7                     | 32                                        | 201                         | 4.30   | 10.85           | 8.0                | 8.0           | 1.810             | 1.810                   | 1.123          | 8.0                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 87                         | 08              | 74              |
| 4103/1     | 1937-38 | 25-0-38           | "               | 4.2                | 11.1            | 0.9            | 16.2                     | 9                                         | 211                         | 4.13   | 10.85           | 8.0                | 8.0           | 1.810             | 1.810                   | 1.123          | 8.0                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 85                         | 72              | 70              |
| 4103/2     | 1937-38 | 25-0-38           | "               | 4.0                | 10.3            | 0.3            | 14.6                     | 9                                         | 208                         | 4.17   | 10.85           | 8.0                | 8.0           | 1.810             | 1.810                   | 1.123          | 8.0                         | 1.810            | 20.0                | 11.5    | 10.0            | 3.0                           | 5.0                    | 9.9           | 3                | 4.5                  | 10.5           | 88                         | 72              | 70              |
| 720        | 1939-40 | 5-5-30            | 20B             | ..                 | ..              | ..             | ..                       | 10                                        | 200                         | 4.73   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           | 6.7                    | 7.0           | 3                | 1.8                  | 17.3           | 92                         | 01              | 02              |
| 1044       | 1939-41 | 6-5-31            | "               | ..                 | ..              | ..             | ..                       | 10                                        | 193                         | 4.44   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           | 6.7                    | 7.0           | 3                | 1.8                  | 17.3           | 92                         | 01              | 02              |
| 1304       | 1939-41 | 6-5-31            | "               | ..                 | ..              | ..             | ..                       | 10                                        | 193                         | 4.44   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           | 6.7                    | 7.0           | 3                | 1.8                  | 17.3           | 92                         | 01              | 02              |
| 1808       | 1939-41 | 6-5-31            | "               | ..                 | ..              | ..             | ..                       | 10                                        | 193                         | 4.44   | 17.08           | 4.0                | 4.0           | 2.089             | 20.0                    | 147.0          | 4.0                         | 2.089            | 20.0                | 13.3    | 13.3            | 1.5                           |                        |               |                  |                      |                |                            |                 |                 |

## 18.—HAGARI 1 (Westerns).

## Seasons.

|                            |                            |
|----------------------------|----------------------------|
| 1924-25 (Sample No. 65).   | 1932-33 (Sample No. 1750). |
| 1925-26 (Sample No. 140).  | 1933-34 (Sample No. 2238). |
| 1926-27 (Sample No. 255).  | 1934-35 (Sample No. 2766). |
| 1928-29 (Sample No. 507).  | 1935-36 (Sample No. 3154). |
| 1929-30 (Sample No. 736).  | 1936-37 (Sample No. 3643). |
| 1930-31 (Sample No. 1031). | 1937-38 (Sample No. 4043). |
| 1931-32 (Sample No. 1311). |                            |

## I.—AGRICULTURAL DETAILS.

- i) *Botanical species* :—*Gossypium herbaceum*.
- ii) *History* :—A pure strain obtained by further selection from within the strain Westerns Hagari 25 at the Agricultural Research Station, Hagari, Bellary district. Comparative trials were started in 1925-26 and general distribution of Hagari 1 began in 1926-27.
- iii) *District of growth* :—Parts of Bellary, Anantapur, Cuddapah and Kurnool districts. The particular samples used in these tests have been grown at the Agricultural Research Station, Hagari.
- iv) *Growing period* :—Sown from the last week in August to the end of September and picked from about the first week of February to end of March; in 1934-35 due to late rains, sown only in the middle of October. In 1935-36, the crop was sown in the first week of September and picking was over by the end of March.
- v) *Soil* :—Black cotton soils.
- vi) *Rainfall* :—Normal rainfall 20 inches annually; 23.1" in 1932-33; 26.1" in 1933-34; 15" in 1934-35; 21.88" in 1935-36; 24.56" in 1936-37; 15.73" in 1937-38.
- vii) *Temperature* :—Mean Minimum: 65.1° F.; Range 77.8° F. to 42.2° F.  
Mean Maximum: 91.4° F.; Range 104.7° F. to 80.7° F.
- viii) *Plant Particulars* (Average values) :—
- Bolls per plant: 4 (spacing 27" × 18").
  - Seeds per boll: 18.
  - Weight of seed: 65 milligrammes.
  - Weight of lint per seed: 28 milligrammes.
  - Ginning percentage: 30.
- ix) *Yield of seed-cotton* :—276 lbs. per acre (1924-30); 212 lbs. per acre in 1932-33; 226 lbs. per acre in 1933-34; 164 lbs. in 1934-35; 272 lbs. per acre in 1935-36; 180 lbs. in 1936-37. Normal yield 270 lbs. per acre (Hagari Agricultural Research Station); average yield 174 lbs. per acre in 1937-38; 225 lbs. per acre at the Hagari Station.

*Area under cultivation* :—

|            |              |            |                        |
|------------|--------------|------------|------------------------|
| 1927-28 .. | 4,300 acres. | 1933-34 .. | 200,300 acres.         |
| 1928-29 .. | 50,700 "     | 1934-35 .. | 200,000 " (estimated). |
| 1929-30 .. | 160,300 "    | 1935-36 .. | 200,000 " ( " )        |
| 1930-31 .. | 147,000 "    | 1936-37 .. | 200,000 " ( " )        |
| 1931-32 .. | 171,800 "    | 1937-38 .. | 200,000 " ( " )        |
| 1932-33 .. | 184,700 "    |            |                        |

In 1934-35 due to the late sowing, the number of bolls per plant was few and ginning percentage low; 1937-38 has been one of late sowing and rapid drying of soil moisture. Hence, very poor yields in the locality.

## II.—GRADER'S REPORT.

|                               | 1928-29.    | 1929-30.         | 1930-31.   | 1931-32.         | 1932-33.    | 1933-34.         | 1934-35.         | 1935-36.         | 1936-37.                   | 1937-38.         |
|-------------------------------|-------------|------------------|------------|------------------|-------------|------------------|------------------|------------------|----------------------------|------------------|
| .. valued ..                  | Broach.     | Broach.          | Broach.    | Broach.          | Broach.     | Broach.          | Broach.          | Broach A/M.      | Fully Good Broach.         | Broach.          |
| .. ..                         | Superfine.  | Extra Superfine. | Superfine. | Extra Superfine. | Superfine.  | Extra Superfine. | Extra Superfine. | Extra Superfine. | Choice Superfine.          | Extra Superfine. |
| .. ..                         | White.      | White.           | White.     | White.           | White.      | White.           | Bright white.    | Bright white.    | Pearly white.              | Bright white.    |
| length ..                     | 3/4-7/8 in. | 7/8 in.          | One inch.  | 31/32 inch.      | 15/16 inch. | 7/8 inch.        | 15/16 inch.      | 7/8 inch.        | Ordinary. Fine 13/16 inch. | 23/32 inch.      |
| strength ..                   | Good.       | Good.            | Good.      | Good.            | Good.       | Fair.            | Very good.       | Good.            | Moderate.                  | Moderate.        |
| ty ..                         | Good.       | Fair.            | Fair.      | Good.            | Fair.       | Fair.            | Regular.         | Regular.         | Regular.                   | Slightly wasty.  |
| above or below contract rate. | Rs. 45 on.  | Rs. 50 on.       | Rs. 60 on. | Rs. 65 on.       | Rs. 25 on.  | Rs. 55 on.       | Rs. 80 on.       | Rs. 45 on.       | Rs. 40 on.                 | Rs. 20 on.       |
| Valuation ..                  | Rs. 323.    | Rs. 200.         | Rs. 180.   | Rs. 181.         | Rs. 180.    | Rs. 185.         | Rs. 232.         | Rs. 203.         | Rs. 240.                   | Rs. 151.         |
| .. ..                         | 8-5-29.     | 24-5-30.         | 24-5-31.   | 23-4-32.         | 1-5-33.     | 1-5-34.          | 3-7-35.          | 25-4-36.         | 4-0-37.                    | 21-5-38.         |
| .. ..                         | ..          | ..               | ..         | ..               | ..          | ..               | Slightly neppy.  | ..               | ..                         | ..               |

### III.—FIBRE PARTICULARS.

| 1. Fibre-Length Distribution (Balls Sorter).—          |             |          |          |          |          |          |          |          |          |          |  |
|--------------------------------------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|
| Mean group-length in eighths of an inch.               | Percentage. |          |          |          |          |          |          |          |          |          |  |
|                                                        | 1924-29.    | 1929-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |  |
| 2                                                      | 0.2         | 1.6      | 1.1      | 0.4      | 0.1      | 0.9      | 0.8      | 1.7      | 0.1      | 0.5      |  |
| 3                                                      | 1.0         | 3.8      | 2.0      | 1.8      | 2.3      | 2.2      | 2.0      | 1.7      | 1.0      | 1.0      |  |
| 4                                                      | 3.8         | 10.8     | 4.0      | 4.0      | 5.2      | 4.7      | 4.5      | 3.1      | 3.1      | 2.0      |  |
| 5                                                      | 9.0         | 21.9     | 13.7     | 10.6     | 11.8     | 12.0     | 11.0     | 7.8      | 7.5      | 7.4      |  |
| 6                                                      | 22.6        | 33.8     | 32.1     | 22.2     | 21.5     | 27.1     | 21.0     | 16.4     | 10.6     | 10.8     |  |
| 7                                                      | 30.5        | 21.0     | 31.3     | 23.0     | 33.7     | 32.0     | 31.0     | 23.1     | 37.5     | 33.7     |  |
| 8                                                      | 20.0        | 5.7      | 11.6     | 7.5      | 16.4     | 15.4     | 18.2     | 28.3     | 20.3     | 24.5     |  |
| 9                                                      | 6.2         | 1.4      | 3.0      | 1.0      | 3.4      | 3.7      | 3.6      | 11.0     | 6.0      | 10.4     |  |
| 10                                                     | 0.6         | ..       | ..       | ..       | 0.3      | 0.4      | 0.8      | 3.4      | 1.1      | 2.6      |  |
| 11                                                     | 0.2         | ..       | ..       | ..       | ..       | ..       | ..       | 0.2      | ..       | ..       |  |
| 2. Fibre-Length (inch).—                               |             |          |          |          |          |          |          |          |          |          |  |
| (a) By Balls Sorter                                    | 0.84        | 0.84     | 0.01     | 0.83     | 0.82     | 0.80     | 0.82     | 0.80     | 0.80     | 0.85     |  |
| (b) By Beer Sorter                                     | 0.84        | 0.84     | 0.01     | 0.83     | 0.83     | 0.80     | 0.84     | 0.81     | 0.85     | 0.87     |  |
| 3. Fibre-Length Irregularity (%)                       | ..          | 13.8     | 10.1     | 13.8     | 10.3     | 13.9     | 12.5     | 13.1     | 12.2     | 12.2     |  |
| 4. Fibre-Weight per inch (millionth of an ounce)       | 0.163       | 0.173    | 0.166    | 0.172    | 0.173    | 0.171    | 0.167    | 0.170    | 0.180    | 0.181    |  |
| 5. Fibre-Strength (oz.).—                              |             |          |          |          |          |          |          |          |          |          |  |
| (a) By Balls Tester                                    | 0.140*      | 0.128    | 0.101    | 0.102    | 0.110    | 0.130    | 0.124    | 0.140    | 0.141    | 0.133    |  |
| (b) By O'Neill Tester                                  | 0.140*      | 0.128    | 0.150    | 0.147    | 0.144    | 0.131    | 0.130    | 0.135    | 0.139    | 0.123    |  |
| 6. Fibre-Strength per unit fibre-weight per inch.      | 0.68*       | 0.73     | 0.94     | 0.90     | 0.84     | 0.76     | 0.78     | 0.83     | 0.79     | 0.71     |  |
| 7. Fibre-Rigidity (millionth of an ounce, square-inch) | 0.101*      | 0.120    | 0.128    | 0.133    | ..       | ..       | ..       | ..       | ..       | ..       |  |
| 8. Ribbon-Width (thousandth of an inch)                | 0.03*       | 0.71     | 0.66     | 0.65     | 0.70     | ..       | ..       | ..       | ..       | ..       |  |
| 9. Convolution per inch                                | 78*         | 88       | 71       | 71       | 93       | ..       | ..       | ..       | ..       | ..       |  |
| 10. Maturity Test Results (%).—                        |             |          |          |          |          |          |          |          |          |          |  |
| (a) Mature                                             | ..          | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       |  |
| (b) Half-mature                                        | ..          | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       |  |
| (c) Immature                                           | ..          | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       |  |

\* Results for one season only, 1928-29.

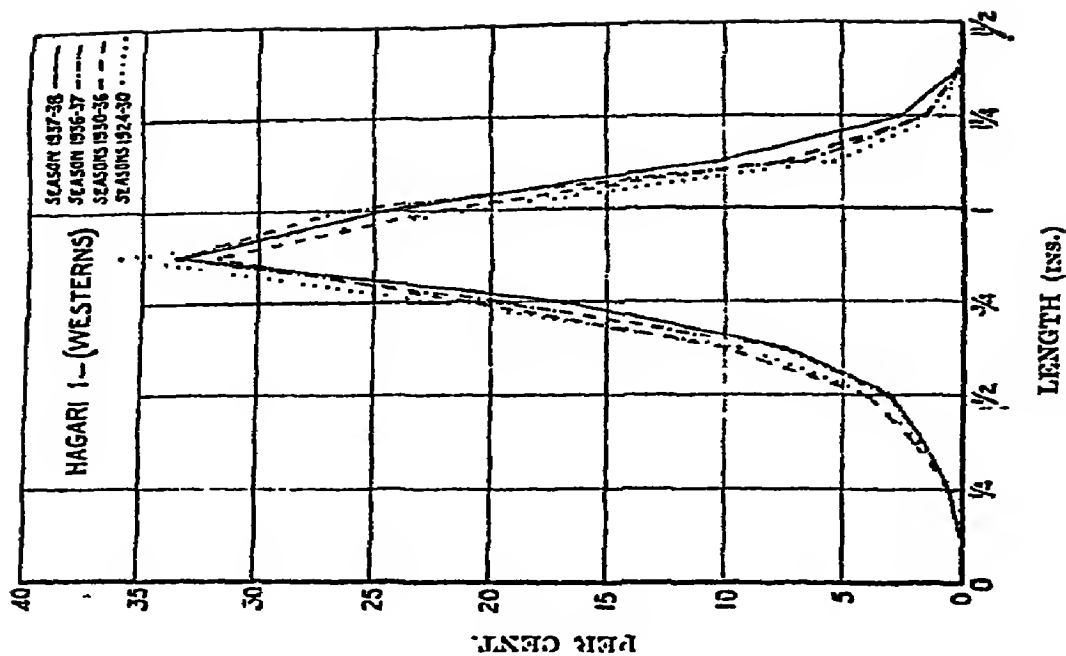


Fig. 18.—Sorter Diagrams for Hagari 1—(Westerns).

## IV.—SPINNING TESTS.

Treatment :—

**Blow-room.**—Upto 1933-34 (inclusive):—Lattice feeder, Crighton (twice), Hopper, Scutcher (3 times). The 1925-26 and 1926-27 samples were passed directly through the Crighton (once); 1928-29 to 1931-32 samples were passed once through the Crighton.

1934-35 onwards:—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

**Card-room** :—Upto 1934-35 (inclusive.—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards :—As above but spun from single hank roving on Ring Frame No. 3, which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

Spinning Master's Report :—

| Season.       | 1928-29.                                                            | 1929-30.                                                | 1930-31.                                                            | 1931-32.           | 1932-33.           | 1933-34.           | 1934-35.           | 1935-36.           | 1936-37.                       | 1937-38.                      |
|---------------|---------------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------------------|-------------------------------|
| .. ..         | White to creamy-white.                                              | White to creamy-white; bright.                          | White; very bright.                                                 | White.             | White; bright.     | White; bright.     | White; bright.     | White; bright.     | Creamy-white to white; bright. | White; bright.                |
| .. ..         | Very clean.                                                         | Perfectly clean.                                        | Perfectly clean.                                                    | Very clean.        | Very clean.        | Very clean.        | Very clean.        | Very clean.        | Very clean.                    | Very clean.                   |
| .. ..         | Full bodied.                                                        | Soft and bodied.                                        | Full bodied.                                                        | ..                 | Good bodied.       | Smooth and bodied. | Good bodied.       | Good bodied.       | Good bodied.                   | Fair.                         |
| and Neppiness | Well-ginned.                                                        | Very well ginned.                                       | Well-ginned.                                                        | Well-ginned.       | Well-ginned.       | Well-ginned.       | Well-ginned.       | Well-ginned.       | Well-ginned.                   | Well-ginned.                  |
| .. ..         | ..                                                                  | ..                                                      | ..                                                                  | ..                 | ..                 | ..                 | ..                 | ..                 | ..                             | ..                            |
| .. ..         | ..                                                                  | Clean.                                                  | Perfectly clean.                                                    | Clean.             | Clean.             | Clean.             | Clean.             | Clean.             | Good and clean.                | Clean.                        |
| .. ..         | ..                                                                  | Even and clean.                                         | First class.                                                        | Even and nep-free. | Even and nep-free. | Even and nep-free. | Even and nep-free. | Even and nep-free. | Good and nep-free.             | Very good; quite free of nep. |
| ten flat      | ..                                                                  | 11.25 grams.                                            | 6 grams.                                                            | 11.4 grams.        | 12.0 grams.        | 13.6 grams.        | 16.5 grams.        | 10.0 grams.        | 10.3 grams.                    | 10.9 grams.                   |
| .. ..         | Staple fairly regular and fairly strong. A very good sample indeed. | Staple somewhat regular in length but of good strength. | Blow room and card losses are lowest recorded in Laboratory so far. | ..                 | ..                 | ..                 | ..                 | ..                 | ..                             | ..                            |

Spinning Test Details and Results :—See Table 18, page 88.

## V.—REMARKS.

i) **Fibre.**—Both the mean fibre-length and the fibre-weight per unit length of this cotton occasionally show large seasonal variations. The fibre-length is exceptionally high in 1928-29 and 1935-36 and very low in 1933-34. The fibre-weight per inch is fairly constant since 1929-30. The fibre-strength and fibre-strength per unit fibre-weight are high in 1930-31 and 1931-32. The 1937-38 sample is equal to its predecessor in all fibre-properties except fibre-strength which is a little lower in the current than in the previous season.

ii) **Waste.**—The samples of this cotton have been supplied in a very clean condition. It can be seen from the low blow-room loss, which, in 1930-31, was only 1.6 per cent. The blow-room loss is also low in most seasons.

iii) **Breakages.**—Yarn breakages in the ring frame are generally few in 20's counts, but they are fairly numerous in 1928-29 and 1929-30 and numerous in 1932-33. They are also numerous or numerous in the higher counts in most seasons. The 1937-38 sample is fairly well in all the three counts.

iv) **Yarns.**—The 20's yarns spun from this cotton have varied from 'very even' to 'fairly even' in the different seasons, while the 30's yarns are generally even to 'very even'. They are practically free of neps in all seasons except 1929-30, when they are neppy. Like the fibre-properties, the yarn-strength results of this cotton are subject to seasonal variation, being poor in 1928-29 and 1932-33, and very good indeed in 1931.

v) **Conclusion.**—The following are the highest standard warp counts for which this cotton is adjudged suitable in the different seasons :—

|         |    |                      |         |    |       |
|---------|----|----------------------|---------|----|-------|
| 1924-25 | .. | 30's.                | 1931-32 | .. | 30's. |
| 1925-26 | .. | 30's.                | 1932-33 | .. | 25's. |
| 1926-27 | .. | 27's.                | 1933-34 | .. | 28's. |
| 1927-28 | .. | (Not sent for test). | 1934-35 | .. | 29's. |
| 1928-29 | .. | 24's.                | 1935-36 | .. | 30's. |
| 1929-30 | .. | 27's.                | 1936-37 | .. | 30's. |
| 1930-31 | .. | 36's.                | 1937-38 | .. | 29's. |



Number ... 0.11  
 Inter ... 1.77  
 Rover ... 4.50  
 20S ... 3/0  
 24S ... 4/0  
 30S ... 7/0  
 20B... 10,400 r.p.m.  
 24S... 10,375 r.p.m.  
 30S... 9,350 r.p.m.

| Sample No. | Season. | Date of Spinning. | Counts Nominal. | WASTE PERCENTAGES. |                 |                |             | RING FRAME PARTICULARS.*                  |                     |        |                 | YARN TEST RESULTS. |                 |                  |                |                             |                  |            |        |                 |                  | TEMPERATURE (°F.). | RELATIVE HUMIDITY.   |               |                            |                 |                 |               |               |                        |
|------------|---------|-------------------|-----------------|--------------------|-----------------|----------------|-------------|-------------------------------------------|---------------------|--------|-----------------|--------------------|-----------------|------------------|----------------|-----------------------------|------------------|------------|--------|-----------------|------------------|--------------------|----------------------|---------------|----------------------------|-----------------|-----------------|---------------|---------------|------------------------|
|            |         |                   |                 | Blow Room Loss.    | Card Room Loss. | Spinning Loss. | Total Loss. | Yarn Breakages per 100 spindles per hour. | Front Roller Speed. | Draft. | Turns per inch. | 12A.               |                 |                  |                |                             | BALISTO.         |            |        |                 |                  |                    | SINGLE THREAD.       |               |                            |                 |                 | Splying Room. | Testing Room. |                        |
|            |         |                   |                 |                    |                 |                |             |                                           |                     |        |                 | Counts Actual.     | Strength (lbs.) | Irregularity (%) | Count-Strength | Work of Rupture (inch-lbs.) | Irregularity (%) | Count-Work | Counts | Strength (ozs.) | Irregularity (%) |                    | Weakness Percentage. | Extension (%) | Extension Irregularity (%) | Evenness Class. | Neeps per yard. |               |               | Turns per Inch Actual. |
|            |         |                   |                 |                    |                 |                |             |                                           |                     |        |                 |                    |                 |                  |                |                             |                  |            |        |                 |                  |                    |                      |               |                            |                 |                 |               |               |                        |
| 507.       | 1924-27 | 3-5-29            | 20 A            | 3.8                | 9.7             | 0.9            | 13.5        | 11                                        | 185                 | 4.39   | 10.85           | 19.5               | 84.5            | 5.0              | 1.031          | 110.4                       | 3.7              | 2,208      | 10.3   | 11.8            | 9.7              | 1.8                | 0.1                  | 0.4           | 2                          | 10.2            | 16.3            | 83            | 75            | 71                     |
| 730        | 1928-30 | 21-6-30           | "               | 3.9                | 0.0             | 0.9            | 10.8        | 25                                        | 191                 | 4.44   | 10.85           | 19.4               | 81.0            | 4.8              | 1.207          | 130.2                       | 3.0              | 2,208      | 10.3   | 11.8            | 13.2             | 0.0                | 7.0                  | 7.3           | 2                          | 10.2            | 16.3            | 83            | 75            | 69                     |
| 1311       | 1930-31 | 24-4-31           | "               | 2.2                | 5.8             | 0.4            | 10.1        | 42                                        | 206                 | 4.55   | 10.85           | 19.4               | 81.0            | 4.8              | 1.684          | 130.2                       | 3.0              | 2,208      | 10.3   | 11.8            | 9.8              | 0.0                | 7.0                  | 7.2           | 2                          | 10.2            | 16.3            | 83            | 75            | 69                     |
| 1311       | 1931-32 | 29-4-32           | "               | 2.0                | 5.0             | 0.8            | 8.6         | 42                                        | 198                 | 4.32   | 10.85           | 19.8               | 80.0            | 4.9              | 1.384          | 130.2                       | 3.0              | 2,208      | 10.3   | 11.8            | 9.8              | 0.0                | 7.0                  | 7.2           | 2                          | 10.2            | 16.3            | 83            | 75            | 69                     |
| 2760       | 1932-33 | 3-5-33            | "               | 2.6                | 5.0             | 0.0            | 10.8        | 42                                        | 199                 | 4.26   | 10.85           | 19.0               | 80.0            | 5.7              | 1.373          | 130.2                       | 3.0              | 2,208      | 10.3   | 11.8            | 9.8              | 0.0                | 7.0                  | 7.2           | 2                          | 10.2            | 16.3            | 83            | 75            | 69                     |
| 2760       | 1932-33 | 26-4-32           | "               | 2.8                | 5.0             | 0.0            | 10.8        | 42                                        | 199                 | 4.32   | 10.85           | 19.0               | 80.0            | 5.7              | 1.373          | 130.2                       | 3.0              | 2,208      | 10.3   | 11.8            | 9.8              | 0.0                | 7.0                  | 7.2           | 2                          | 10.2            | 16.3            | 83            | 75            | 69                     |
| 3700       | 1933-34 | 21-4-34           | "               | 3.7                | 7.8             | 0.4            | 11.9        | 29                                        | 194                 | 4.52   | 10.85           | 19.0               | 79.0            | 6.0              | 1.501          | 130.2                       | 3.0              | 2,208      | 10.3   | 11.4            | 14.4             | 0.0                | 6.0                  | 8.4           | 2                          | 10.2            | 16.3            | 83            | 75            | 69                     |
| 3154       | 1934-35 | 21-4-35           | "               | 3.2                | 5.4             | 0.2            | 8.6         | 10                                        | 185                 | 4.40   | 10.85           | 19.8               | 81.0            | 5.4              | 1.604          | 130.2                       | 3.0              | 2,208      | 10.3   | 11.4            | 14.4             | 0.0                | 6.0                  | 8.4           | 2                          | 10.2            | 16.3            | 83            | 75            | 69                     |
| 4043       | 1936-37 | 2-6-37            | "               | 3.8                | 3.8             | 0.4            | 10.1        | 13                                        | 206                 | 4.36   | 10.85           | 19.8               | 81.0            | 6.0              | 1.574          | 130.2                       | 3.0              | 2,208      | 10.3   | 11.4            | 14.4             | 0.0                | 6.0                  | 8.4           | 2                          | 10.2            | 16.3            | 83            | 75            | 69                     |
| 4043/1     | 1937-38 | 6-5-38            | "               | 3.3                | 3.8             | 0.4            | 10.1        | 10                                        | 208                 | 4.43   | 10.85           | 19.5               | 82.0            | 6.2              | 1.611          | 130.2                       | 3.0              | 2,208      | 10.3   | 11.4            | 14.4             | 0.0                | 6.0                  | 8.4           | 2                          | 10.2            | 16.3            | 83            | 75            | 69                     |
| 4043/2     | 1937-38 | 6-5-38            | "               | 3.3                | 6.1             | 0.4            | 6.4         | 0                                         | 212                 | 4.43   | 10.85           | 19.6               | 82.0            | 6.2              | 1.611          | 130.2                       | 3.0              | 2,208      | 10.3   | 11.4            | 14.4             | 0.0                | 6.0                  | 8.4           | 2                          | 10.2            | 16.3            | 83            | 75            | 69                     |
| 255        | 1924-27 | 21-6-27           | 20 B            | ...                | ...             | ...            | ...         | 7                                         | 192                 | 4.40   | 17.98           | 19.5               | 80.0            | 4.0              | 1.080          | 130.3                       | 3.0              | 2,370      | 10.6   | 12.3            | 11.0             | 2.0                | 7.2                  | 8.1           | 1                          | 1.1             | 17.4            | 86            | 77            | 83                     |
| 567        | 1928-30 | 21-6-30           | "               | ...                | ...             | ...            | ...         | 7                                         | 190                 | 4.47   | 17.98           | 19.4               | 79.8            | 5.0              | 1.648          | 130.3                       | 3.0              | 2,370      | 10.6   | 12.3            | 11.0             | 2.0                | 7.2                  | 8.1           | 1                          | 1.1             | 17.4            | 86            | 77            | 83                     |
| 730        | 1930-31 | 21-6-31           | "               | ...                | ...             | ...            | ...         | 22                                        | 195                 | 4.35   | 17.98           | 19.5               | 86.6            | 4.4              | 1.087          | 130.3                       | 3.0              | 2,370      | 10.6   | 12.3            | 11.0             | 2.0                | 7.2                  | 8.1           | 1                          | 1.1             | 17.4            | 86            | 77            | 83                     |
| 1311       | 1931-32 | 20-4-32           | "               | ...                | ...             | ...            | ...         | 27                                        | 187                 | 4.55   | 17.98           | 20.1               | 87.0            | 5.4              | 1.062          | 147.2                       | 3.0              | 2,370      | 10.6   | 12.3            | 11.0             | 2.0                | 7.2                  | 8.1           | 1                          | 1.1             | 17.4            | 86            | 77            | 83                     |
| 1750       | 1932-33 | 3-5-33            | "               | ...                | ...             | ...            | ...         | 13                                        | 194                 | 4.40   | 17.98           | 19.8               | 80.0            | 4.3              | 1.741          | 130.2                       | 3.0              | 2,370      | 10.6   | 12.3            | 11.0             | 2.0                | 7.2                  | 8.1           | 1                          | 1.1             | 17.4            | 86            | 77            | 83                     |
| 2238       | 1933-34 | 21-4-34           | "               | ...                | ...             | ...            | ...         | 60                                        | 193                 | 4.30   | 17.98           | 19.7               | 81.4            | 5.2              | 1.604          | 130.2                       | 3.0              | 2,370      | 10.6   | 12.3            | 11.0             | 2.0                | 7.2                  | 8.1           | 1                          | 1.1             | 17.4            | 86            | 77            | 83                     |
| 2700       | 1934-35 | 21-4-35           | "               | ...                | ...             | ...            | ...         | 10                                        | 200                 | 4.40   | 17.98           | 19.8               | 83.0            | 5.0              | 1.643          | 130.2                       | 3.0              | 2,370      | 10.6   | 12.3            | 11.0             | 2.0                | 7.2                  | 8.1           | 1                          | 1.1             | 17.4            | 86            | 77            | 83                     |
| 3154       | 1935-36 | 21-4-36           | "               | ...                | ...             | ...            | ...         | 10                                        | 200                 | 4.52   | 17.98           | 19.8               | 83.0            | 5.0              | 1.643          | 130.2                       | 3.0              | 2,370      | 10.6   | 12.3            | 11.0             | 2.0                | 7.2                  | 8.1           | 1                          | 1.1             | 17.4            | 86            | 77            | 83                     |
| 3643       | 1936-37 | 21-4-37           | "               | ...                | ...             | ...            | ...         | 10                                        | 200                 | 4.52   | 17.98           | 19.8               | 83.0            | 5.0              | 1.643          | 130.2                       | 3.0              | 2,370      | 10.6   | 12.3            | 11.0             | 2.0                | 7.2                  | 8.1           | 1                          | 1.1             | 17.4            | 86            | 77            | 83                     |
| 4043/1     | 1937-38 | 7-5-38            | "               | ...                | ...             | ...            | ...         | 28                                        | 208                 | 4.44   | 17.98           | 19.7               | 89.4            | 5.0              | 1.761          | 132.8                       | 3.0              | 2,370      | 10.6   | 12.3            | 11.0             | 2.0                | 7.2                  | 8.1           | 1                          | 1.1             | 17.4            | 86            | 77            | 83                     |
| 4043/2     | 1937-38 | 7-5-38            | "               | ...                | ...             | ...            | ...         | 10                                        | 212                 | 4.43   | 17.98           | 19.5               | 89.4            | 5.4              | 1.797          | 138.4                       | 3.0              | 2,370      | 10.6   | 12.3            | 11.0             | 2.0                | 7.2                  | 8.1           | 1                          | 1.1             | 17.4            | 86            | 77            | 83                     |
| 2700       | 1934-35 | 1-7-35            | 24              | ...                | ...             | ...            | ...         | 40                                        | 182                 | 5.43   | 19.73           | 24.0               | 80.0            | 4.6              | 1.684          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 3154       | 1935-36 | 21-4-36           | "               | ...                | ...             | ...            | ...         | 0                                         | 174                 | 5.42   | 19.73           | 23.9               | 70.4            | 4.6              | 1.684          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 3643       | 1936-37 | 21-4-37           | "               | ...                | ...             | ...            | ...         | 18                                        | 190                 | 5.65   | 19.73           | 23.7               | 70.4            | 5.3              | 1.681          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 4043/1     | 1937-38 | 7-5-38            | "               | ...                | ...             | ...            | ...         | 14                                        | 197                 | 5.33   | 19.73           | 23.5               | 72.6            | 4.9              | 1.706          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 4043/2     | 1937-38 | 10-5-38           | "               | ...                | ...             | ...            | ...         | 14                                        | 194                 | 5.44   | 19.73           | 24.4               | 80.0            | 5.0              | 1.632          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 1031       | 1934-27 | 25-1-31           | 30              | ...                | ...             | ...            | ...         | 5                                         | 146                 | 6.05   | 21.86           | 29.1               | 48.0            | 6.8              | 1.414          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 1311       | 1931-32 | 25-1-32           | "               | ...                | ...             | ...            | ...         | 42                                        | 168                 | 6.05   | 21.86           | 29.0               | 48.0            | 6.8              | 1.414          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 1760       | 1932-33 | 25-1-33           | "               | ...                | ...             | ...            | ...         | 42                                        | 168                 | 6.05   | 21.86           | 29.0               | 48.0            | 6.8              | 1.414          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 2238       | 1933-34 | 20-4-34           | "               | ...                | ...             | ...            | ...         | 42                                        | 168                 | 6.05   | 21.86           | 29.0               | 48.0            | 6.8              | 1.414          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 2760       | 1934-35 | 27-4-35           | "               | ...                | ...             | ...            | ...         | 38                                        | 168                 | 6.05   | 21.86           | 29.0               | 48.0            | 6.8              | 1.414          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 3154       | 1935-36 | 27-4-36           | "               | ...                | ...             | ...            | ...         | 10                                        | 168                 | 6.05   | 21.86           | 29.0               | 48.0            | 6.8              | 1.414          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 3643       | 1936-37 | 4-5-37            | "               | ...                | ...             | ...            | ...         | 39                                        | 169                 | 6.02   | 21.86           | 29.0               | 48.0            | 6.8              | 1.468          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 4043/1     | 1937-38 | 6-5-38            | "               | ...                | ...             | ...            | ...         | 13                                        | 168                 | 6.02   | 21.86           | 29.0               | 48.0            | 6.8              | 1.468          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 4043/2     | 1937-38 | 10-5-38           | "               | ...                | ...             | ...            | ...         | 23                                        | 164                 | 6.07   | 21.86           | 29.1               | 52.3            | 4.8              | 1.551          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 1031       | 1934-27 | 25-1-31           | 40              | ...                | ...             | ...            | ...         | 4                                         | 114                 | 8.82   | 26.07           | 39.2               | 32.3            | 6.8              | 1.206          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 1311       | 1931-32 | 25-1-32           | "               | ...                | ...             | ...            | ...         | 23                                        | 131                 | 9.14   | 26.07           | 39.2               | 32.3            | 6.8              | 1.206          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 1760       | 1932-33 | 25-1-33           | "               | ...                | ...             | ...            | ...         | 49                                        | 136                 | 8.56   | 26.07           | 39.2               | 32.3            | 6.8              | 1.206          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |
| 2238       | 1933-34 | 20-4-34           | "               | ...                | ...             | ...            | ...         | 34                                        | 120                 | 8.36   | 26.07           | 39.2               | 32.3            | 6.8              | 1.206          | 138.4                       | 3.0              | 2,673      | 12.4   | 12.4            | 9.9              | 3.0                | 7.7                  | 7.3           | 3                          | 0.5             | 17.3            | 91            | 69            | 77                     |

Diameter of ring frame front roller - 1 1/2". Diameter of rings - 1 1/2".

## 19.—KARUNGANNI C7.

## Seasons.

|                            |                            |
|----------------------------|----------------------------|
| 1924-25 (Sample No. 86).   | 1931-32 (Sample No. 1320). |
| 1925-26 (Sample No. 175).  | 1932-33 (Sample No. 1777). |
| 1926-27 (Sample No. 270).  | 1933-34 (Sample No. 2276). |
| 1927-28 (Sample No. 383).  | 1934-35 (Sample No. 2765). |
| 1928-29 (Sample No. 510).  | 1935-36 (Sample No. 3156). |
| 1929-30 (Sample No. 717).  | 1936-37 (Sample No. 3651). |
| 1930-31 (Sample No. 1045). | 1937-38 (Sample No. 4132). |

## I.—AGRICULTURAL DETAILS.

*Botanical species* :—*Gossypium indicum*.

*History* :—Work commenced at Koilpatti Farm in 1902-03, and seed of Karunganni was purchased from selected growers from 1907-08, this seed being therefore merely bulk-selection. A more or less fixed type known as Company No. 1 was obtained at the Farm by 1913-14; successive improvements on this type were obtained, that at present under distribution being C7, on which the present tests have been made. C7 was first selected in 1920-21; general distribution began in 1925-26. The purity of this strain is doubtful as no selfing to prevent cross-fertilization was done in the second and third generations.

*District of growth* :—Madura, Ramnad, Tinnevely, Coimbatore and Trichinopoly districts. "Company" cotton is the predominating type in the Madras Tinnevelles area. The particular samples used in these tests have been grown on the Government Farm, Koilpatti.

*Growing period* :—Sown in October, and picked in March and April and also during June and July (when a second flush is obtained).

*Soil* :—Black cotton soil.

*Rainfall* :—30 inches annually (19 inches in the growing period October/February). The rainfall in 1934-35 was poor being only 19 inches and there was practically no rain since the sowing until the season picking was over. In 1935-36, 19.85" of which 13.49" was during the growing period and the distribution was quite unfavourable; 25.39" in 1936-37 of which 14.21" was in the growing period and which was below normal by 4.85" and so the cotton crop suffered in the later stages from want of sufficient moisture in the lower layers of the soil. 23.10" in 1937-38 of which 13.75" was in the growing period and which was below normal by 5.16".

*Temperature* :—October-April :—{ Maximum 83° -100°F.  
Minimum 64° -78°F.

*Plant Particulars* (Average values) :—

(a) Bolls per plant: 11 (spacing 18"×11").

(b) Seeds per boll: 20.

(c) Weight of seed: 53 milligrammes.

(d) Weight of lint per seed: 24 milligrammes.

(e) Ginning percentage: 31.

*Yield of seed-cotton* :—378 lbs. per acre (average, 1925-26 to 1936-37); 517 lbs. per acre in 1937-38 (season pickings only).

*Area under cultivation* :—

|            |            |            |               |
|------------|------------|------------|---------------|
| 1925-26 .. | 350 acres. | 1932-33 .. | 12,060 acres. |
| 1926-27 .. | 1,500 "    | 1933-34 .. | 17,000 "      |
| 1927-28 .. | 16,800 "   | 1934-35 .. | 59,940 "      |
| 1929-30 .. | 14,750 "   | 1935-36 .. | 91,080 "      |
| 1930-31 .. | 10,620 "   | 1936-37 .. | 71,700 "      |
| 1931-32 .. | 5,790 "    | 1937-38 .. | 80,870 "      |

The above figures relate to strain C7 only.

## II.—GRADER'S REPORT.

|                           | 1924-29.            | 1929-30.            | 1930-31.            | 1931-32.                          | 1932-33.             | 1933-34.            | 1934-35.            | 1935-36.               | 1936-37.                       | 1937-38.              |
|---------------------------|---------------------|---------------------|---------------------|-----------------------------------|----------------------|---------------------|---------------------|------------------------|--------------------------------|-----------------------|
| valued ..                 | Broach. Superfine.  | Broach. Superfine.  | Broach. Superfine.  | Broach-Northlans Extra superfine. | Broach. Superfine.   | Broach. Superfine.  | Broach. Superfine.  | Broach-A/M. Superfine. | Broach-J/A. Fine to superfine. | Broach. Superfine.    |
| .. ..                     | White-creamy.       | White.              | Reddish.            | White.                            | White.               | White.              | White-bright.       | Bright-white.          | White.                         | Bright-white.         |
| length ..                 | 1-1/16 inch.        | 1-1/8 inch.         | 1 inch.             | 1-1/32 inch.                      | 29/32 inch.          | 29/32 inch.         | Full 7/8 in.        | Barely 7/8 inch.       | Silky. 13/16 inch.             | 3/4 inch.             |
| strength ..               | Good.               | Good.               | Fair.               | Good.                             | Good.                | Fair.               | Good.               | Good.                  | Moderate.                      | Somewhat soft & weak. |
| ity ..                    | Good.               | Fair.               | Fair.               | Fair.                             | Fair.                | Fair.               | Regular.            | Regular.               | Slightly wasty.                | Rather wasty.         |
| above or contract rate .. | Rs. 85 on. Rs. 820. | Rs. 60 on. Rs. 250. | Rs. 60 on. Rs. 100. | Rs. 60 on. Rs. 170.               | Rs. 140 on. Rs. 215. | Rs. 15 on. Rs. 230. | Rs. 70 on. Rs. 230. | Rs. 45 on. Rs. 100.    | Rs. 40 on. Rs. 227.            | Rs. 30 on. Rs. 153.   |
| Valuation ..              | 14-5-29.            | 10-4-30.            | 11-5-31.            | 5-5-32.                           | 30-5-33.             | 23-5-34.            | 3-7-35.             | 1-5-36.                | 10-6-37.                       | 16-7-38.              |



## III.—FIBRE PARTICULARS.

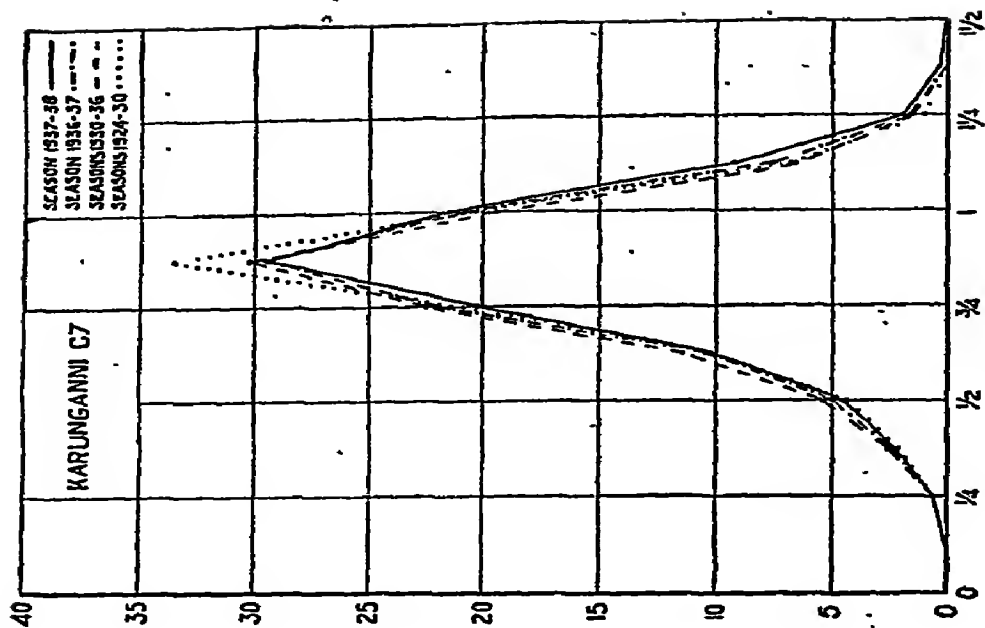


Fig. 10.—Sorter Diagrams for Karunganni C7.

| 1. Fibre-Length Distribution (Balls Sorter) :—            |    | Percentage. |          |          |          |          |          |          |          |          |          |
|-----------------------------------------------------------|----|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|                                                           |    | 1924-25.    | 1929-30. | 1930-31. | 1931-32. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |
| Mean group-length in eighths of an inch.                  |    |             |          |          |          |          |          |          |          |          |          |
| 2                                                         |    | 0.5         | 0.4      | 0.2      | 0.3      | 0.1      | 1.0      | 1.3      | 0.0      | 0.5      | 0.0      |
| 3                                                         |    | 2.1         | 2.1      | 2.0      | 2.0      | 2.4      | 2.8      | 2.6      | 2.2      | 2.4      | 2.3      |
| 4                                                         |    | 4.3         | 4.7      | 5.5      | 5.0      | 4.2      | 5.3      | 5.4      | 4.8      | 5.0      | 4.5      |
| 5                                                         |    | 10.1        | 10.5     | 11.0     | 13.3     | 10.0     | 12.4     | 10.7     | 10.0     | 10.4     | 10.2     |
| 6                                                         |    | 21.6        | 20.3     | 23.8     | 24.5     | 19.8     | 22.9     | 23.0     | 21.1     | 22.1     | 20.2     |
| 7                                                         |    | 33.5        | 33.3     | 32.0     | 28.6     | 30.6     | 29.1     | 29.1     | 31.6     | 29.0     | 30.4     |
| 8                                                         |    | 20.3        | 20.6     | 17.2     | 17.7     | 22.7     | 18.0     | 18.4     | 20.6     | 20.8     | 21.4     |
| 9                                                         |    | 0.5         | 7.7      | 6.9      | 6.2      | 8.6      | 0.0      | 0.0      | 7.0      | 7.5      | 9.2      |
| 10                                                        |    | 1.1         | 0.4      | 0.0      | 1.6      | 1.7      | 1.2      | 1.6      | 1.2      | 1.0      | 1.0      |
| 11                                                        |    | ..          | ..       | ..       | ..       | ..       | ..       | ..       | ..       | ..       | 0.3      |
| 2. Fibre-Length (inch) :—                                 |    |             |          |          |          |          |          |          |          |          |          |
| (a) By Balls Sorter                                       | .. | 0.84        | 0.84     | 0.82     | 0.82     | 0.80     | 0.82     | 0.83     | 0.84     | 0.81     | 0.85     |
| (b) By Ball Sorter                                        | .. | 0.84        | 0.83     | 0.82     | 0.82     | 0.80     | 0.82     | 0.83     | 0.82     | 0.83     | 0.83     |
| 3. Fibre-Length Irregularity (%)                          | .. | ..          | 16.4     | 16.0     | 17.1     | 15.5     | 18.6     | 17.4     | 10.6     | 10.3     | 10.1     |
| 4. Fibre-Weight per inch (millionth of an ounce)          | .. | 0.180       | 0.181    | 0.161    | 0.181    | 0.167    | 0.164    | 0.167    | 0.157    | 0.170    | 0.180    |
| 5. Fibre-Strength (oz.) :—                                |    |             |          |          |          |          |          |          |          |          |          |
| (a) By Balls Tester                                       | .. | 0.180*      | 0.170    | 0.166    | 0.164    | 0.200    | 0.197    | 0.200    | 0.166    | 0.188    | 0.169    |
| (b) By O'Neill Tester                                     | .. | 0.160*      | 0.166    | 0.148    | 0.185    | 0.203    | 0.199    | 0.188    | 0.162    | 0.200    | 0.162    |
| 6. Fibre-Strength per unit fibre-weight per inch.         | .. | 0.92*       | 0.94     | 0.98     | 1.05     | 1.21     | 1.21     | 1.10     | 1.01     | 1.11     | 0.89     |
| 7. Fibre-Flexibility (millionth of an ounce, square-inch) | .. | 0.170*      | 0.215    | 0.110    | 0.166    | ..       | ..       | ..       | ..       | ..       | ..       |
| 8. Ribbon-Width (thousandth of an inch)                   | .. | 0.66        | 0.78     | 0.66     | 0.67     | 0.69     | ..       | ..       | ..       | ..       | ..       |
| 9. Convolution per inch                                   | .. | 80          | 50       | 71       | 70       | 70       | ..       | ..       | ..       | ..       | ..       |
| 10. Maturity Test Results (%) :—                          |    |             |          |          |          |          |          |          |          |          |          |
| (a) Mature                                                | .. | ..          | ..       | ..       | ..       | ..       | ..       | 52       | 55       | 65       | 72       |
| (b) Half-mature                                           | .. | ..          | ..       | ..       | ..       | ..       | ..       | 10       | 10       | 10       | 14       |
| (c) Immature                                              | .. | ..          | ..       | ..       | ..       | ..       | ..       | 32       | 25       | 19       | 14       |

\* Mean for three seasons, 1929-30.

## IV.—SPINNING TESTS.

*Treatment :—*

a) *Blow-room.*—Upto 1933-34 (inclusive):—Lattice feeder, Crighton (once only), Hopper, Scutcher (3 times). The 1926-27 cotton was passed direct through the Crighton (once only). The 1932-33 and 1933-34 cottons were passed twice through the Crighton.

1934-35 onwards:—Hopper bale opener, Horizontal cleaner, Crighton (once), Gridded dust trunks, Cage exhaust, Hopper feeder, Scutcher (3 times).

b) *Card-room.*—Upto 1934-35 (inclusive):—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 1.

1935-36 onwards:—As above but spun from single hank roving on Ring Frame No. 3, which is fitted with tape drive arrangement for spindles, while Ring Frame No. 1 possesses a band drive arrangement.

*Spinning Master's Report :—*

| Season               | 1928-29.                                | 1929-30.                             | 1930-31.                       | 1931-32.                   | 1932-33.                       | 1933-34.           | 1934-35.                       | 1935-36.                       | 1936-37.                                 | 1937-38.                       |
|----------------------|-----------------------------------------|--------------------------------------|--------------------------------|----------------------------|--------------------------------|--------------------|--------------------------------|--------------------------------|------------------------------------------|--------------------------------|
| .. ..                | Creamy-white; bright.                   | Creamy-white; bright.                | Creamy-white; bright.          | Creamy-white; very bright. | White to creamy-white; bright. | White; bright.     | White to creamy-white; bright. | White to creamy-white; bright. | White to creamy-white.                   | White to creamy-white; bright. |
| .. ..                | Very clean.                             | Perfectly clean.                     | Very clean.                    | Very clean.                | ..                             | Clean.             | Clean.                         | Clean.                         | Fairly clean.                            | Clean.                         |
| .. ..                | Good soft.                              | Good bodied.                         | Slightly soft but good bodied. | Soft and bodied.           | Soft and bodied.               | Smooth and bodied. | Good smooth.                   | Good smooth.                   | Good smooth.                             | Good soft.                     |
| and Neppi-<br>.. ..  | Well-ginned.<br>A few full clean seeds. | Well-ginned.<br>..                   | Well-ginned.<br>..             | Well-ginned.<br>..         | Well-ginned.<br>..             | Well-ginned.<br>.. | Well-ginned.<br>..             | Well-ginned.<br>..             | Well-ginned.<br>A few undeveloped seeds. | Well-ginned.<br>..             |
| ER ..                | ..                                      | ..                                   | Clean.                         | Clean.                     | Clean.                         | Clean.             | Clean.                         | Clean.                         | Good and clean.                          | Clean.                         |
| .. ..                | ..                                      | ..                                   | Slightly neppy.                | Good.                      | Even and nep-free.             | Good.              | Good.                          | Good.                          | Good and nep-free.                       | Good and a trifle neppy.       |
| of ten flit<br>.. .. | ..                                      | ..                                   | 13.7 grams.                    | 13.0 grams.                | 16.0 grams.                    | 15.6 grams.        | 20.4 grams.                    | 11.6 grams.                    | 13.5 grams.                              | 14.2 grams.                    |
| .. ..                | ..                                      | Staple regular in length and strong. | ..                             | ..                         | ..                             | ..                 | ..                             | ..                             | ..                                       | ..                             |

*Spinning Test Details and Results :—See Table 19, page 92.*

## V.—REMARKS.

i) *Fibre.*—Except for occasional and small variations the mean fibre-length of this cotton has shown remarkable consistency. Its fibre-length irregularity is a little on the high side. The fibre-weight per inch has also remained fairly constant since 1929-30 being only 1.5 in 1935-36. The fibre-strength and the intrinsic strength showed good improvement since 1931-32 but the current year's sample is abnormally weak. Both the fibre-weight and the ribbon width are unusually high in 1929-30 and the former very low in 1931. The 1937-38 sample has practically the same mean fibre-length and fibre-length irregularity as its predecessor, but it is considerably weaker.

ii) *Waste.*—This is a clean cotton and has usually yielded a small blow-room loss. The 1934-35 and 1936-37 samples, however, were not so clean as the other samples. The blow-room loss is generally about 8 per cent., though it is rather high for the 1934-35 sample.

iii) *Breakages.*—With a few exceptions, yarn-breakages in the ring frame are rather numerous for this cotton; even in 20's counts. They are very numerous for the 1929-30 sample.

iv) *Yarns.*—This cotton usually gives even 20's and even to fairly even 26's, the 23's yarns being rather better than usual in this respect. Its yarns are inclined to be somewhat neppy, those of 1934-35 being distinctly neppy, but since 1935-36 a good improvement is noticeable in this respect. The yarn-strength results are poor in 1928-29, much better in 1931-32 and best of all in 1936-37.

v) *Conclusion.*—The following are the highest standard warp counts for which this cotton is adjudged suitable in the different seasons :—

|         |    |       |         |    |       |         |    |       |
|---------|----|-------|---------|----|-------|---------|----|-------|
| 1924-25 | .. | 26's. | 1929-30 | .. | 23's. | 1934-35 | .. | 28's. |
| 1925-26 | .. | 26's. | 1930-31 | .. | 26's. | 1935-36 | .. | 23's. |
| 1926-27 | .. | 24's. | 1931-32 | .. | 21's. | 1936-37 | .. | 34's. |
| 1927-28 | .. | 24's. | 1932-33 | .. | 23's. | 1937-38 | .. | 30's. |
| 1928-29 | .. | 20's. | 1933-34 | .. | 25's. |         |    |       |



## 20.—KOILPATTI I.

Season 1936-37 (Sample No. 3606).

Season 1937-38 (Sample No. 4129).

## I.—AGRICULTURAL DETAILS.

- (i) *Botanical species* :—*Gossypium Indicum*.
- (ii) *History* :—A pure strain obtained by further selection from C7, made in 1928-29. It was grown under comparative trials during 1931-32, 1932-33 and 1933-34 at the Koilpatti Agricultural Research Station and given for general distribution during 1934-35. It is more vigorous and produces an earlier crop. In addition, it is resistant to bud and boll shedding by untimely rains while C7 is very susceptible to shedding.
- (iii) *District of growth* :—Madura, Ramnad, Tinnevely and Coimbatore districts. The particular samples used in these tests have been grown on the Government Farm, Koilpatti.
- (iv) *Growing period* :—Sown in October and picked in March and April and also during June and July (when a second flush is obtained).
- (v) *Soil* :—Black cotton soil.
- (vi) *Rainfall* :—30" annually and 19" during the growing period, October to February. The rainfall in 1936-37 was 25.39" of which 14.21" was during the growing period and which was below the average by 4.85" and the cotton crop suffered in the later stages from want of moisture in the lower layers of the soil. In 1937-38, 23.1" of which 13.75" was in the growing period which was 5.16" below normal.
- (vii) *Temperature* :—October to April : Maximum 83°—100° F.  
Minimum 64°—78° F.
- (viii) *Plant Particulars* : (Average values) :—
- Bolls per plant : 14 (spacing 18" × 12").
  - Seeds per boll : 19.
  - Weight of seed : 61 milligrammes.
  - Weight of lint per seed : 32 milligrammes.
  - Ginning percentage : 33.
- (ix) *Yield of seed-cotton* :— 606 lbs. per acre (average of 6 years 1931-37).  
1933-34 : 652 lbs. per acre.  
1934-35 : 766 „ „ „  
1935-36 : 366 „ „ „  
1937-38 : 406 „ „ „ (bulk yields).
- (x) *Area under cultivation* :— 1936-37 : 14,010 acres.  
1937-38 : 39,440 „

## II.—GRADER'S REPORT.

| Season.                            | 1936-37.         | 1937-38.      |
|------------------------------------|------------------|---------------|
| Contract valued under              | Broach J/A.      | Broach.       |
| Class                              | Extra superfine. | Superfine.    |
| Colour                             | Bright white.    | Bright white. |
| Feel                               | Very silky.      | Silky.        |
| Staple Length                      | 15/16".          | 15/16".       |
| Staple Strength                    | Very good.       | Good.         |
| Regularity                         | Regular.         | Regular.      |
| Value above or below Contract rate | Rs. 85 on.       | Rs. 70 on.    |
| Basis                              | Rs. 227.         | Rs. 154.      |
| Date of Valuation                  | 19-6-37.         | 1-8-38.       |
| Remarks                            | ..               | ..            |

### III.—FIBRE PARTICULARS.

#### 1. Fibre-Length Distribution (Balls Sorter) :—

| Mean group-length in eighths of an inch. | Percentage. |          |
|------------------------------------------|-------------|----------|
|                                          | 1936-37.    | 1937-38. |
| 2                                        | 0.9         | 0.2      |
| 3                                        | 2.4         | 1.9      |
| 4                                        | 5.2         | 3.4      |
| 5                                        | 9.8         | 7.3      |
| 6                                        | 20.8        | 16.5     |
| 7                                        | 28.4        | 27.6     |
| 8                                        | 22.9        | 27.0     |
| 9                                        | 7.1         | 12.4     |
| 10                                       | 2.2         | 3.4      |
| 11                                       | 0.3         | 0.3      |

#### 2. Fibre-Length (inch) :—

|                     |      |      |
|---------------------|------|------|
| (a) By Balls Sorter | 0.84 | 0.89 |
| (b) By Baer Sorter  | 0.86 | 0.87 |

#### 3. Fibre-Length Irregularity (%)

|      |      |
|------|------|
| 17.0 | 14.7 |
|------|------|

#### 4. Fibre-Weight per inch (millionth of an ounce)

|       |       |
|-------|-------|
| 0.146 | 0.181 |
|-------|-------|

#### 5. Fibre-Strength (oz.) :—

|                       |       |       |
|-----------------------|-------|-------|
| (a) By Balls Tester   | 0.171 | 0.185 |
| (b) By O'Neill Tester | 0.171 | 0.162 |

#### 6. Fibre-strength per unit fibre weight per inch

|      |      |
|------|------|
| 1.17 | 0.96 |
|------|------|

#### 7. Maturity Test Results (%) :—

|                 |    |    |
|-----------------|----|----|
| (a) Mature      | 69 | 71 |
| (b) Half-mature | 14 | 11 |
| (c) Immature    | 17 | 18 |

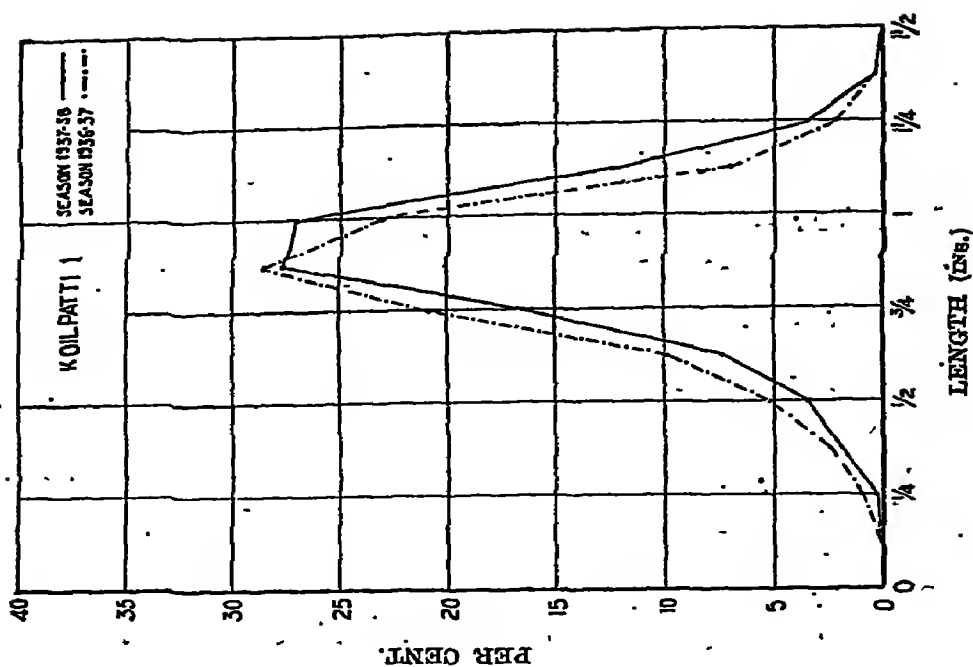


Fig. 20.—Sorter diagrams for Kolpatti I.

## IV.—SPINNING TESTS.

1. *Treatment* :—

- (a) *Blow-room*.—Hopper bale opener, Horizontal cleaner, Crighton, Gridded dust trunks, Cage exhaust, Hopper feeder, Seutcher (3 times).
- (b) *Card-room*.—Card, Drawing (2 heads), Slubber, Inter, Rover and spun from single hank roving on Ring Frame No. 3.

2. *Spinning Master's Report* :—

| Season.                         | 1936-37.               | 1937-38.               |
|---------------------------------|------------------------|------------------------|
| Colour .. .. .                  | White to creamy-white. | White to creamy-white. |
| Cleanliness .. .. .             | Clean.                 | Very clean.            |
| Feel .. .. .                    | Good soft.             | Good.                  |
| Ginning and neppiness .. .. .   | Well-ginned.           | Well-ginned.           |
| Seeds .. .. .                   | ..                     | ..                     |
| Card sliver .. .. .             | Good and soft.         | Clean.                 |
| Card web .. .. .                | Good.                  | A trifle neppy.        |
| Weight of 10 flat ships .. .. . | 16.6 grams.            | 13.5 grams.            |
| Remarks .. .. .                 | ..                     | ..                     |

3. *Spinning Test Details and Results* :—See Table 20, page 96.

## V.—REMARKS.

(i) *Fibre*.—This year's sample is slightly longer and more regular in length than the last year's sample, which it resembles in respect of fibre-strength and fibre-maturity. On the other hand, it is 24 per cent. coarser than the last year's sample, which causes a corresponding decrease in its intrinsic strength.

(ii) *Waste*.—This year's sample was delivered in a somewhat cleaner condition than last year's and gave lower waste-loss in the blow-room. The card-room loss of this cotton is inclined to be on the high side.

(iii) *Breakages*.—This cotton has so far spun fairly satisfactorily in the ring frame upto 30's counts.

(iv) *Yarns*.—This cotton has given rather less even yarns this year than last year, especially in 30's counts, but, on the other hand, there is some improvement in yarn neppiness this year. This cotton has given very variable results in yarn strength in the two seasons. This is probably due to the large variation in its fibre-weight. It has been found suitable for spinning upto the following highest standard warp counts :

1936-37 .. 36's.  
1937-38 .. 26's.

TABLE 20.—SPINNING TEST RESULTS FOR KOILPATI I.

HANK (1937-38).  
 Card .. .. .0.16  
 Slubber .. .. .0.76  
 Inter .. .. .1.74  
 Rover .. .. .3.51; 3.94

TRAVELLER COUNTS.  
 20's .. .. 3/0  
 24's .. .. 4/0  
 30's .. .. 7/0

SPINDLE SPEED (1937-38).  
 20A .. .. 9,700 r.p.m.  
 20B .. .. 10,400 r.p.m.  
 24 .. .. 9,800 r.p.m.  
 30 .. .. 9,075 r.p.m.

| 1          | 2       | 3                 | 4               | 5               | 6               | 7            | 8                       | WASTE PERCENTAGES. |                             |                       |                     | RING FRAME PARTICULARS.* |                 |              |                           | YARN TEST RESULTS.   |               |                            |                 |                                           |                              |        |                 |                |                        | TEMPERATURE (°F.) |            | RELATIVE HUMIDITY (%) |    |    |                |  |  |  |  |  |  |                |               |
|------------|---------|-------------------|-----------------|-----------------|-----------------|--------------|-------------------------|--------------------|-----------------------------|-----------------------|---------------------|--------------------------|-----------------|--------------|---------------------------|----------------------|---------------|----------------------------|-----------------|-------------------------------------------|------------------------------|--------|-----------------|----------------|------------------------|-------------------|------------|-----------------------|----|----|----------------|--|--|--|--|--|--|----------------|---------------|
| Sample No. | Season. | Date of Spinning. | Counts Nominal. | Blow Room Loss. |                 |              |                         | Card Room Loss.    |                             |                       |                     | Spinning Loss.           |                 |              |                           | Total Loss.          |               |                            |                 | Yarn Breakages per 100 spindles per hour. | Front Roller Speed, R. P. M. | Draft. | Turns per Inch. | LEA.           |                        |                   | BALLISTIC. |                       |    |    | SINGLE THREAD. |  |  |  |  |  |  | Spinning Room. | Testing Room. |
|            |         |                   |                 | Counts Actual.  | Strength (lbs.) | Strength (%) | Count-Strength Product. | Counts Actual.     | Work of Rupture (inch-lbs.) | Work Irregularity (%) | Count-Work Product. | Counts.                  | Strength (ozs.) | Strength (%) | Strength Irregularity (%) | Wrinkles Percentage. | Extension (%) | Extension Irregularity (%) | Evenness Class. |                                           |                              |        |                 | Reps per yard. | Turns per Inch Actual. |                   |            |                       |    |    |                |  |  |  |  |  |  |                |               |
| 1036-37    | 1036-37 | 18-6-37           | 20 A            | 7.2             | 9.0             | 0.4          | 15.8                    | 0                  | 206                         | 5.80                  | 10.85               | 10.8                     | 93.2            | 5.0          | 1,815                     | 10.0                 | 147.2         | 4.0                        | 2,020           | 10.8                                      | 12.4                         | 10.5   | 2.8             | 7.0            | 8.3                    | 3                 | 2.4        | 10.3                  | 88 | 74 | 80             |  |  |  |  |  |  |                |               |
| 1037-38    | 1037-38 | 4-7-38            | "               | 5.3             | 9.8             | 0.5          | 15.0                    | 52                 | 208                         | 5.93                  | 10.85               | 20.5                     | 65.0            | 5.5          | 1,345                     | 20.5                 | 125.0         | 3.3                        | 2,575           | 20.7                                      | 10.7                         | 15.0   | 0.5             | 7.2            | 10.7                   | 3                 | 1.0        | 10.2                  | 80 | 74 | 72             |  |  |  |  |  |  |                |               |
| 1037-38    | 1037-38 | 5-7-38            | "               | 5.4             | 0.0             | 0.2          | 14.4                    | 10                 | 208                         | 0.05                  | 10.85               | 10.9                     | 71.8            | 6.3          | 1,429                     | 19.0                 | 129.0         | 3.5                        | 2,570           | 20.8                                      | 11.3                         | 11.2   | 2.5             | 7.1            | 11.5                   | 4                 | 0.8        | 10.0                  | 88 | 73 | 72             |  |  |  |  |  |  |                |               |
| 1036-37    | 1036-37 | 18-6-37           | 20 B            | ..              | ..              | ..           | ..                      | 13                 | 200                         | 5.80                  | 17.08               | 10.0                     | 104.8           | 4.3          | 2,054                     | 10.0                 | 154.2         | 4.2                        | 3,022           | 20.0                                      | 13.4                         | 11.2   | 3.8             | 7.2            | 9.0                    | 3                 | 2.5        | 17.4                  | 80 | 73 | 80             |  |  |  |  |  |  |                |               |
| 1037-38    | 1037-38 | 5-7-38            | "               | ..              | ..              | ..           | ..                      | 31                 | 210                         | 5.93                  | 17.08               | 20.1                     | 70.2            | 5.9          | 1,592                     | 20.0                 | 132.8         | 4.1                        | 2,736           | 20.0                                      | 11.7                         | 0.0    | 3.0             | 7.2            | 11.0                   | 3                 | 0.8        | 17.3                  | 00 | 71 | 71             |  |  |  |  |  |  |                |               |
| 1037-38    | 1037-38 | 5-7-38            | "               | ..              | ..              | ..           | ..                      | 0                  | 210                         | 6.10                  | 17.08               | 10.0                     | 85.2            | 6.2          | 1,695                     | 21.1                 | 137.2         | 3.7                        | 2,895           | 20.0                                      | 12.1                         | 10.9   | 2.5             | 7.2            | 10.5                   | 3                 | 0.8        | 17.1                  | 80 | 72 | 74             |  |  |  |  |  |  |                |               |
| 1037-38    | 1037-38 | 5-7-38            | 24              | ..              | ..              | ..           | ..                      | 23                 | 181                         | 0.31                  | 19.73               | 24.3                     | 60.0            | 8.1          | 1,448                     | 24.5                 | 108.4         | 2.5                        | 2,056           | 24.2                                      | 10.1                         | 10.1   | 2.0             | 7.4            | 10.1                   | 4                 | 0.8        | 10.2                  | 88 | 73 | 71             |  |  |  |  |  |  |                |               |
| 4120/2     | 1937-38 | 6-7-38            | "               | ..              | ..              | ..           | ..                      | 5                  | 181                         | 0.55                  | 10.73               | 23.7                     | 64.8            | 0.1          | 1,530                     | 23.8                 | 113.1         | 3.0                        | 2,000           | 24.5                                      | 10.1                         | 12.5   | 0.0             | 7.2            | 10.5                   | 4                 | 1.0        | 10.0                  | 88 | 74 | 73             |  |  |  |  |  |  |                |               |
| 3006       | 1930-37 | 21-6-37           | 30              | ..              | ..              | ..           | ..                      | 15                 | 158                         | 0.32                  | 21.80               | 20.2                     | 64.0            | 5.9          | 1,860                     | 20.2                 | 99.1          | 2.5                        | 2,804           | 20.7                                      | 8.8                          | 12.8   | 4.5             | 0.4            | 10.8                   | 4                 | 2.0        | 21.1                  | 85 | 80 | 82             |  |  |  |  |  |  |                |               |
| 4120/1     | 1937-38 | 23-7-38           | "               | ..              | ..              | ..           | ..                      | 13                 | 152                         | 7.88                  | 21.80               | 30.5                     | 80.0            | 8.0          | 1,190                     | 30.9                 | 84.4          | 2.2                        | 2,732           | 30.7                                      | 7.1                          | 15.0   | 11.0            | 0.4            | 11.1                   | 5                 | 1.0        | 21.0                  | 86 | 73 | 72             |  |  |  |  |  |  |                |               |
| 4120/2     | 1937-38 | 25-7-38           | "               | ..              | ..              | ..           | ..                      | 3                  | 152                         | 8.33                  | 21.80               | 30.0                     | 42.8            | 9.2          | 1,281                     | 29.0                 | 88.2          | 2.3                        | 2,011           | 31.5                                      | 7.3                          | 13.1   | 0.0             | 0.8            | 10.3                   | 5                 | 0.8        | 20.0                  | 85 | 78 | 71             |  |  |  |  |  |  |                |               |
| 3006       | 1030-37 | 3-8-37            | 24              | ..              | ..              | ..           | ..                      | 10                 | 187                         | 7.54                  | 23.20               | 33.8                     | 49.2            | 7.0          | 1,693                     | 33.0                 | 85.0          | 2.8                        | 2,882           | 34.1                                      | 0.7                          | 12.0   | 8.0             | 5.8            | 0.8                    | 5                 | 2.8        | 22.0                  | 80 | 70 | 78             |  |  |  |  |  |  |                |               |

\* Diameter of ring frame front roller— $\frac{1}{2}$  inch. Diameter of rings— $\frac{1}{16}$  inch.

TABLE 21.—FIBRE PROPERTIES OF STANDARD INDIAN COTTONS, 1926-38.

## A.—ENGLISH UNITS.

| Report No. | Cotton.             | Season. | Fibre-<br>Length<br>(inch.) | Fibre-<br>Length<br>Irregularity<br>(%). | Fibre-<br>Weight<br>per inch.<br>(10-6 oz.) | Fibre-<br>Strength<br>(oz.) | Fibre-<br>Strength<br>(oz.)<br>÷<br>Fibre-<br>Weight<br>per inch.<br>(10-6 oz.) | Maturity<br>test<br>results (%)<br>(a) Mature.<br>(b) Half-<br>mature.<br>(c) Im-<br>mature. | Ribbon<br>Width.<br>(10-3 inch.) | Convolu-<br>tions per<br>inch. | Fibre-<br>Rigidity<br>(oz.-in. <sup>2</sup><br>× 10-6). | Fibre-<br>Rigidity<br>÷<br>(Fibre-<br>Weight) <sup>2</sup><br>× 10 <sup>7</sup> . | Highest<br>Standard<br>Warp<br>Counts. |
|------------|---------------------|---------|-----------------------------|------------------------------------------|---------------------------------------------|-----------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------|--------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------|
| 1          | Jayawant            | 1929-30 | 0.02                        | 11.4                                     | 0.181                                       | ..                          | ..                                                                              | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 40                                     |
|            | "                   | 1930-31 | 0.06                        | 16.3                                     | 0.175                                       | ..                          | ..                                                                              | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 37                                     |
|            | "                   | 1931-32 | 0.03                        | 13.0                                     | 0.183                                       | ..                          | ..                                                                              | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 40                                     |
|            | "                   | 1932-33 | 0.02                        | 14.2                                     | 0.194                                       | ..                          | ..                                                                              | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 36                                     |
|            | "                   | 1933-34 | 0.00                        | 10.1                                     | 0.147                                       | 0.144                       | 0.93                                                                            | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 38                                     |
|            | "                   | 1934-35 | 0.04                        | 15.9                                     | 0.140                                       | 0.148                       | 1.05                                                                            | 57-16-27                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 42                                     |
|            | "                   | 1935-36 | 0.04                        | 15.8                                     | 0.150                                       | 0.152                       | 1.01                                                                            | 55-24-21                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 42                                     |
|            | "                   | 1936-37 | 0.02                        | 13.9                                     | 0.139                                       | 0.167                       | 0.88                                                                            | 84-11-5                                                                                      | ..                               | ..                             | ..                                                      | ..                                                                                | 41                                     |
| 2          | Gadag 1             | 1937-38 | 0.05                        | 18.7                                     | 0.105                                       | 0.101                       | 0.83                                                                            | 07-19-14                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 39                                     |
|            | "                   | 1926-27 | 0.81                        | ..                                       | 0.179                                       | 0.141                       | 0.79                                                                            | ..                                                                                           | 0.63                             | 110                            | 0.151                                                   | 0.47                                                                              | 33                                     |
|            | "                   | 1927-28 | 0.86                        | ..                                       | 0.107                                       | 0.148                       | 0.89                                                                            | ..                                                                                           | 0.02                             | 115                            | 0.152                                                   | 0.55                                                                              | 38                                     |
|            | "                   | 1928-29 | 0.82                        | ..                                       | 0.162                                       | 0.141                       | 0.87                                                                            | ..                                                                                           | 0.59                             | 122                            | 0.138                                                   | 0.53                                                                              | 26                                     |
|            | "                   | 1929-30 | 0.84                        | 13.0                                     | 0.148                                       | 0.140                       | 0.93                                                                            | ..                                                                                           | 0.61                             | 140                            | 0.157                                                   | 0.72                                                                              | 32                                     |
|            | "                   | 1930-31 | 0.88                        | 15.0                                     | 0.158                                       | 0.138                       | 0.90                                                                            | ..                                                                                           | 0.00                             | 120                            | 0.152                                                   | 0.65                                                                              | 35                                     |
|            | "                   | 1931-32 | 0.80                        | 15.5                                     | 0.154                                       | 0.142                       | 0.92                                                                            | ..                                                                                           | 0.60                             | 118                            | 0.202                                                   | 0.85                                                                              | 20                                     |
|            | "                   | 1932-33 | 0.81                        | 17.5                                     | 0.134                                       | 0.152                       | 1.13                                                                            | ..                                                                                           | 0.03                             | 125                            | ..                                                      | ..                                                                                | 30                                     |
| 3          | Surat 1927 A. L. F. | 1933-34 | 0.81                        | 18.1                                     | 0.153                                       | 0.124                       | 0.81                                                                            | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 30                                     |
|            | "                   | 1934-35 | 0.79                        | 14.5                                     | 0.147                                       | 0.140                       | 0.05                                                                            | 61-27-12                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 33                                     |
|            | "                   | 1935-36 | 0.84                        | 18.9                                     | 0.102                                       | 0.151                       | 0.93                                                                            | 03-26-11                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 30                                     |
|            | "                   | 1936-37 | 0.80                        | 17.3                                     | 0.160                                       | 0.132                       | 0.89                                                                            | 83-14-3                                                                                      | ..                               | ..                             | ..                                                      | ..                                                                                | 30                                     |
|            | "                   | 1937-38 | 0.83                        | 14.1                                     | 0.142                                       | 0.141                       | 0.90                                                                            | 71-18-11                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 38                                     |
|            | "                   | 1926-27 | 0.93                        | ..                                       | 0.290                                       | 0.172                       | 0.85                                                                            | ..                                                                                           | 0.73                             | 96                             | 0.162                                                   | 0.40                                                                              | 32                                     |
|            | "                   | 1927-28 | 0.94                        | ..                                       | 0.207                                       | 0.107                       | 0.81                                                                            | ..                                                                                           | 0.74                             | 73                             | 0.132                                                   | 0.31                                                                              | 30                                     |
|            | "                   | 1928-29 | 0.90                        | ..                                       | 0.204                                       | 0.105                       | 0.81                                                                            | ..                                                                                           | 0.71                             | 63                             | 0.125                                                   | 0.30                                                                              | 32                                     |
| 4          | Wagad 8             | 1929-30 | 0.97                        | 12.9                                     | 0.186                                       | 0.171                       | 0.95                                                                            | ..                                                                                           | 0.74                             | 45                             | 0.157                                                   | 0.48                                                                              | 34                                     |
|            | "                   | 1930-31 | 0.94                        | 16.3                                     | 0.201                                       | 0.130                       | 0.93                                                                            | ..                                                                                           | 0.67                             | 63                             | 0.162                                                   | 0.48                                                                              | 20                                     |
|            | "                   | 1931-32 | 0.96                        | 10.7                                     | 0.175                                       | 0.131                       | 1.05                                                                            | ..                                                                                           | 0.66                             | 01                             | 0.120                                                   | 0.42                                                                              | 30                                     |
|            | "                   | 1932-33 | 0.94                        | 18.5                                     | 0.190                                       | 0.197                       | 1.04                                                                            | ..                                                                                           | 0.74                             | 02                             | ..                                                      | ..                                                                                | 31                                     |
|            | "                   | 1933-34 | 0.99                        | 17.2                                     | 0.199                                       | 0.184                       | 1.08                                                                            | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 37                                     |
|            | "                   | 1934-35 | 0.06                        | 10.5                                     | 0.183                                       | 0.180                       | 1.02                                                                            | 50-21-29                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 34                                     |
|            | "                   | 1935-36 | 1.01                        | 18.0                                     | 0.168                                       | 0.164                       | 0.98                                                                            | 45-28-27                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 34                                     |
|            | "                   | 1936-37 | 0.92                        | 21.4                                     | 0.193                                       | 0.172                       | 0.89                                                                            | 68-17-15                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 26                                     |
| 5          | Sind Sudhar         | 1937-38 | 0.08                        | 14.2                                     | 0.155                                       | 0.145                       | 0.94                                                                            | 46-27-27                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 38                                     |
|            | "                   | 1926-27 | 0.80                        | ..                                       | 0.264                                       | 0.178                       | 0.07                                                                            | ..                                                                                           | 0.72                             | 45                             | 0.221                                                   | 0.32                                                                              | 14                                     |
|            | "                   | 1927-28 | 0.77                        | ..                                       | 0.189                                       | 0.124                       | 0.66                                                                            | ..                                                                                           | 0.72                             | 40                             | 0.122                                                   | 0.34                                                                              | 15                                     |
|            | "                   | 1928-29 | 0.80                        | ..                                       | 0.239                                       | 0.144                       | 0.60                                                                            | ..                                                                                           | 0.70                             | 58                             | 0.185                                                   | 0.24                                                                              | 15                                     |
|            | "                   | 1929-30 | 0.76                        | 10.1                                     | 0.195                                       | 0.183                       | 0.08                                                                            | ..                                                                                           | 0.77                             | 50                             | 0.189                                                   | 0.36                                                                              | 12                                     |
|            | "                   | 1930-31 | 0.78                        | 11.3                                     | 0.257                                       | 0.172                       | 0.67                                                                            | ..                                                                                           | 0.77                             | 59                             | 0.238                                                   | 0.44                                                                              | 12                                     |
|            | "                   | 1931-32 | 0.80                        | 17.0                                     | 0.225                                       | 0.172                       | 0.76                                                                            | ..                                                                                           | 0.74                             | 56                             | 0.231                                                   | 0.46                                                                              | 16                                     |
|            | "                   | 1932-33 | 0.84                        | 14.1                                     | 0.240                                       | 0.172                       | 0.72                                                                            | ..                                                                                           | 0.82                             | 79                             | ..                                                      | ..                                                                                | 13                                     |
| 6          | Sind N. R.          | 1933-34 | 0.80                        | 15.9                                     | 0.190                                       | 0.144                       | 0.72                                                                            | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 16                                     |
|            | "                   | 1934-35 | 0.78                        | 14.4                                     | 0.232                                       | 0.160                       | 0.00                                                                            | 48-28-24                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 14                                     |
|            | "                   | 1935-36 | 0.78                        | 15.0                                     | 0.210                                       | 0.140                       | 0.05                                                                            | 47-27-20                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 12                                     |
|            | "                   | 1936-37 | 0.81                        | 15.2                                     | 0.221                                       | 0.158                       | 0.71                                                                            | 53-10-23                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 13                                     |
|            | "                   | 1937-38 | 0.82                        | 12.8                                     | 0.211                                       | 0.144                       | 0.68                                                                            | 57-18-25                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 13                                     |
|            | "                   | 1930-31 | 0.08                        | 10.1                                     | 0.146                                       | ..                          | ..                                                                              | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 42                                     |
|            | "                   | 1931-32 | 0.02                        | 19.4                                     | 0.120                                       | ..                          | ..                                                                              | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 42                                     |
|            | "                   | 1932-33 | 0.90                        | 18.7                                     | 0.129                                       | ..                          | ..                                                                              | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 50                                     |
| 7          | P. A. 4 F.          | 1933-34 | 1.02                        | 10.2                                     | 0.131                                       | ..                          | ..                                                                              | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 50                                     |
|            | "                   | 1934-35 | 0.97                        | 17.7                                     | 0.127                                       | 0.152                       | 1.19                                                                            | 50-30-14                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 43                                     |
|            | "                   | 1935-36 | 0.94                        | 22.0                                     | 0.147                                       | 0.148                       | 1.01                                                                            | 65-25-10                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 45                                     |
|            | "                   | 1936-37 | 0.05                        | 21.1                                     | 0.138                                       | 0.129                       | 0.03                                                                            | 09-21-10                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 42                                     |
|            | "                   | 1937-38 | 0.05                        | 16.4                                     | 0.129                                       | 0.130                       | 1.08                                                                            | 73-15-12                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 60                                     |
|            | "                   | 1926-27 | 0.78                        | ..                                       | 0.184                                       | 0.132                       | 0.06                                                                            | ..                                                                                           | 0.70                             | 104                            | 0.093                                                   | 0.52                                                                              | 24                                     |
|            | "                   | 1927-28 | 0.70                        | ..                                       | 0.186                                       | 0.155                       | 0.84                                                                            | ..                                                                                           | 0.70                             | 102                            | 0.210                                                   | 0.61                                                                              | 22                                     |
|            | "                   | 1928-29 | 0.76                        | ..                                       | 0.107                                       | 0.109                       | 0.86                                                                            | ..                                                                                           | 0.08                             | 96                             | 0.234                                                   | 0.60                                                                              | 10                                     |
| 8          | P. A. 250 F.        | 1929-30 | 0.82                        | 14.0                                     | 0.155                                       | 0.167                       | 1.03                                                                            | ..                                                                                           | 0.69                             | 107                            | 0.215                                                   | 0.39                                                                              | 20                                     |
|            | "                   | 1930-31 | 0.77                        | 11.5                                     | 0.108                                       | 0.182                       | 0.92                                                                            | ..                                                                                           | 0.71                             | 110                            | 0.226                                                   | 0.53                                                                              | 22                                     |
|            | "                   | 1931-32 | 0.72                        | 10.7                                     | 0.161                                       | 0.131                       | 0.81                                                                            | 77-17-6                                                                                      | ..                               | ..                             | ..                                                      | ..                                                                                | 8                                      |
|            | "                   | 1932-33 | 0.78                        | 14.9                                     | 0.143                                       | 0.144                       | 1.01                                                                            | ..                                                                                           | 0.70                             | 00                             | 0.156                                                   | 0.00                                                                              | 20                                     |
|            | "                   | 1933-34 | 0.73                        | 12.4                                     | 0.140                                       | 0.147                       | 1.05                                                                            | ..                                                                                           | 0.74                             | 108                            | ..                                                      | ..                                                                                | 25                                     |
|            | "                   | 1934-35 | 0.82                        | 13.3                                     | 0.142                                       | 0.136                       | 0.90                                                                            | 43-27-36                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 24                                     |
|            | "                   | 1935-36 | 0.86                        | 15.0                                     | 0.175                                       | 0.180                       | 1.03                                                                            | 49-28-23                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 20                                     |
|            | "                   | 1936-37 | 0.70                        | 15.2                                     | 0.167                                       | 0.168                       | 1.07                                                                            | 55-17-23                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 27                                     |
| 9          | Mollison            | 1937-38 | 0.70                        | 10.6                                     | 0.148                                       | 0.139                       | 0.94                                                                            | 30-24-37                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 24                                     |
|            | "                   | 1926-27 | 0.97                        | ..                                       | 0.098                                       | 0.109                       | 1.11                                                                            | ..                                                                                           | 0.07                             | 88                             | 0.053                                                   | 0.55                                                                              | 40                                     |
|            | "                   | 1927-28 | 0.04                        | ..                                       | 0.142                                       | 0.135                       | 0.95                                                                            | ..                                                                                           | 0.62                             | 118                            | 0.092                                                   | 0.40                                                                              | 42                                     |
|            | "                   | 1928-29 | 0.00                        | ..                                       | 0.122                                       | 0.152                       | 1.24                                                                            | ..                                                                                           | 0.58                             | 122                            | 0.093                                                   | 0.62                                                                              | 39                                     |
|            | "                   | 1929-30 | 1.00                        | 16.0                                     | 0.142                                       | 0.148                       | 1.05                                                                            | ..                                                                                           | 0.61                             | 145                            | 0.101                                                   | 0.50                                                                              | 42                                     |
|            | "                   | 1930-31 | 0.96                        | 20.1                                     | 0.142                                       | 0.183                       | 0.68                                                                            | ..                                                                                           | 0.62                             | 136                            | 0.129                                                   | 0.04                                                                              | 44                                     |
|            | "                   | 1931-32 | 0.90                        | 17.3                                     | 0.122                                       | 0.124                       | 1.62                                                                            | ..                                                                                           | 0.50                             | 110                            | 0.078                                                   | 0.52                                                                              | 39                                     |
|            | "                   | 1932-33 | 0.95                        | 22.0                                     | 0.114                                       | 0.128                       | 1.12                                                                            | ..                                                                                           | 0.60                             | 118                            | 0.080                                                   | 0.02                                                                              | 44                                     |
| 10         | Allgarh A. 10.      | 1933-34 | 0.94                        | 19.4                                     | 0.110                                       | 0.098                       | 0.82                                                                            | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 45                                     |
|            | "                   | 1934-35 | 0.94                        | 19.4                                     | 0.120                                       | 0.120                       | 1.00                                                                            | 51-20-20                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 44                                     |
|            | "                   | 1935-36 | 0.97                        | 16.1                                     | 0.152                                       | 0.108                       | 1.11                                                                            | 59-26-16                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 45                                     |
|            | "                   | 1936-37 | 0.90                        | 20.7                                     | 0.124                                       | 0.140                       | 1.13                                                                            | 38-28-34                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 44                                     |
|            | "                   | 1937-38 | 0.96                        | 20.5                                     | 0.115                                       | 0.122                       | 1.00                                                                            | 53-22-23                                                                                     | ..                               | ..                             | ..                                                      | ..                                                                                | 45                                     |
|            | "                   | 1926-27 | 0.08                        | ..                                       | 0.272                                       | 0.164                       | 0.90                                                                            | ..                                                                                           | 0.77                             | 65                             | 0.242                                                   | 0.33                                                                              | 8                                      |
|            | "                   | 1927-28 | 0.73                        | ..                                       | 0.335                                       | 0.196                       | 0.58                                                                            | ..                                                                                           | 0.88                             | 114                            | 0.403                                                   | 0.41                                                                              | 8                                      |
|            | "                   | 1928-29 | 0.60                        | ..                                       | 0.303                                       | 0.182                       | 0.60                                                                            | ..                                                                                           | 0.70                             | 106                            | 0.512                                                   | 0.56                                                                              | 7                                      |
| 11         | Mollison            | 1929-30 | 0.80                        | 9.8                                      | 0.272                                       | 0.167                       | 0.01                                                                            | ..                                                                                           | 0.81                             | 87                             | 0.380                                                   | 0.52                                                                              | 8                                      |
|            | "                   | 1930-31 | 0.00                        | 11.0                                     | 0.287                                       | 0.170                       | 0.59                                                                            | ..                                                                                           | 0.70                             | 90                             | 0.420                                                   | 0.51                                                                              | 8                                      |
|            | "                   | 1931-32 | 0.70                        | 11.0                                     | 0.242                                       | 0.188                       | 0.78                                                                            | ..                                                                                           | 0.72                             | 78                             | 0.354                                                   | 0.06                                                                              | 8                                      |
|            | "                   | 1932-33 | 0.74                        | 11.5                                     | 0.274                                       | 0.172                       | 0.03                                                                            | ..                                                                                           | 0.78                             | 80                             | ..                                                      | ..                                                                                | 10                                     |
|            | "                   | 1933-34 | 0.68                        | 13.0                                     | 0.282                                       | 0.190                       | 0.08                                                                            | ..                                                                                           | ..                               | ..                             | ..                                                      | ..                                                                                | 8                                      |
|            | "                   | 1934-35 | 0.72                        | 12.0                                     | 0.263                                       | 0.190                       | 0.71                                                                            | 73-21-6                                                                                      | ..                               | ..                             | ..                                                      | ..                                                                                | 9                                      |
|            | "                   | 1935-36 | 0.75                        | 12.2                                     | 0.264                                       | 0.186                       | 0.71                                                                            | 72-21-7                                                                                      | ..                               | ..                             | ..                                                      | ..                                                                                | 8                                      |
|            | "                   | 1936-37 | 0.72                        | 14.4                                     | 0.309                                       | 0.162                       | 0.52                                                                            | 80-13-7                                                                                      | ..                               | ..                             | ..                                                      | ..                                                                                | 7                                      |
| 12         | Allgarh A. 10.      | 1937-38 | 0.76                        | 12.0                                     | 0.230                                       | 0.160                       | 0.76                                                                            | 80-12-8                                                                                      | ..                               | ..                             | ..                                                      | ..                                                                                | 04                                     |
|            | "                   | 1926-27 | 0.66                        | ..                                       | 0.301                                       | 0.183                       | 0.62                                                                            | ..                                                                                           | 0.70                             | 80                             | 0.361                                                   | 0.40                                                                              | 7                                      |
|            | "                   | 1927-28 | 0.70                        | ..                                       | 0.305                                       | 0.200                       | 0.60                                                                            | ..                                                                                           | 0.82                             | 72                             | 0.450                                                   | 0.48                                                                              | 7                                      |
|            | "                   | 1928-29 | 0.72                        | ..                                       | 0.324                                       | 0.226                       | 0.60                                                                            | ..                                                                                           | 0.74                             | 67                             | 0.641                                                   | 0.61                                                                              | 7                                      |
|            | "                   | 1929-30 | 0.68                        | 11.5                                     | 0.277                                       | 0.211                       | 0.76                                                                            | ..                                                                                           | 0.78                             | 74                             | 0.506                                                   | 0.60                                                                              | 7                                      |
|            | "                   | 1930-31 | 0.66                        | 11.8                                     | 0.301                                       | 0.204                       | 0.68                                                                            | ..                                                                                           | 0.77                             | 60                             | 0.672                                                   | 0.74                                                                              | 7                                      |
|            | "                   | 1931-32 | 0.66                        | 11.1                                     | 0.314                                       | 0.212                       | 0.68                                                                            | ..                                                                                           | 0.75                             | 68                             | 0.667                                                   | 0.68                                                                              | 6                                      |
|            | "                   | 1932-33 | 0.67                        | 12.6                                     | 0.290                                       | 0.2                         |                                                                                 |                                                                                              |                                  |                                |                                                         |                                                                                   |                                        |



TABLE 21 (contd.)—FIBRE PROPERTIES OF STANDARD INDIAN COTTONS, 1926-38.

A.—ENGLISH UNITS—(contd.)

| Report No. | Cotton.              | Season. | Fibre Length (inch.) | Fibre Length Irregularity (%) | Fibre Weight per inch. (10-0 oz.) | Fibre Strength (oz.) | Fibre Weight per inch. (10-0 oz.) | Maturity test results (%) (a) Mature. (b) Half-mature. (c) Immature. | Ribbon Width. (10-0 inch.) | Convolutions per inch. | Fibre Rigidity (oz.-in. <sup>2</sup> × 10-5). | Fibre Rigidity × Fibre Weight (10 <sup>7</sup> ). | Highest Standard Warp Counts. |
|------------|----------------------|---------|----------------------|-------------------------------|-----------------------------------|----------------------|-----------------------------------|----------------------------------------------------------------------|----------------------------|------------------------|-----------------------------------------------|---------------------------------------------------|-------------------------------|
| 10         | Allgarh A. 19        | 1933-34 | 0.04                 | 14.5                          | 0.202                             | 0.100                | 0.72                              | 78-12-10                                                             | ..                         | ..                     | ..                                            | ..                                                | 6                             |
|            | "                    | 1934-35 | 0.06                 | 13.0                          | 0.271                             | 0.220                | 0.81                              | 77-15-8                                                              | ..                         | ..                     | ..                                            | ..                                                | 6                             |
|            | "                    | 1935-36 | 0.00                 | 11.4                          | 0.204                             | 0.200                | 0.78                              | 67-15-18                                                             | ..                         | ..                     | ..                                            | ..                                                | 6                             |
|            | "                    | 1936-37 | 0.05                 | 13.5                          | 0.275                             | 0.108                | 0.72                              | 83-0-0                                                               | ..                         | ..                     | ..                                            | ..                                                | 6                             |
|            | "                    | 1937-38 | 0.07                 | 13.0                          | 0.232                             | 0.108                | 0.70                              | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 6                             |
| 11         | O 402 (U. P.)        | 1931-32 | 0.80                 | 13.9                          | 0.204                             | 0.182                | 0.89                              | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 15                            |
|            | "                    | 1932-33 | 0.70                 | 15.0                          | 0.105                             | 0.180                | 0.95                              | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 14                            |
|            | "                    | 1933-34 | 0.70                 | 11.8                          | 0.181                             | 0.109                | 0.93                              | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 18                            |
|            | "                    | 1934-35 | 0.81                 | 15.5                          | 0.104                             | 0.142                | 0.87                              | 03-21-10                                                             | ..                         | ..                     | ..                                            | ..                                                | 22                            |
|            | "                    | 1935-36 | 0.81                 | 17.0                          | 0.184                             | 0.158                | 0.86                              | 03-25-12                                                             | ..                         | ..                     | ..                                            | ..                                                | 16                            |
|            | "                    | 1936-37 | 0.82                 | 15.0                          | 0.108                             | 0.152                | 0.90                              | 63-15-22                                                             | ..                         | ..                     | ..                                            | ..                                                | 23                            |
|            | "                    | 1937-38 | 0.80                 | 13.7                          | 0.199                             | 0.105                | 0.83                              | 81-0-10                                                              | ..                         | ..                     | ..                                            | ..                                                | 10                            |
| 12(a)      | Verdu 202 (Nagpur)   | 1928-29 | 0.80                 | ..                            | 0.215                             | 0.180                | 0.93                              | ..                                                                   | 0.02                       | 72                     | 0.193                                         | 0.42                                              | 26                            |
|            | "                    | 1929-30 | 0.81                 | 12.0                          | 0.100                             | 0.170                | 1.00                              | ..                                                                   | 0.04                       | 92                     | 0.218                                         | 0.79                                              | 21                            |
|            | "                    | 1930-31 | 0.82                 | 12.0                          | 0.180                             | 0.100                | 1.05                              | ..                                                                   | 0.01                       | 82                     | 0.180                                         | 0.52                                              | 26                            |
|            | "                    | 1931-32 | 0.83                 | 15.2                          | 0.176                             | 0.187                | 1.06                              | ..                                                                   | 0.03                       | 60                     | 0.102                                         | 0.02                                              | 25                            |
|            | "                    | 1932-33 | 0.82                 | 14.7                          | 0.180                             | 0.178                | 0.99                              | ..                                                                   | 0.03                       | 80                     | 0.246                                         | 0.70                                              | 23                            |
|            | "                    | 1933-34 | 0.77                 | 15.0                          | 0.188                             | 0.108                | 0.80                              | 73-14-13                                                             | ..                         | ..                     | ..                                            | ..                                                | 24                            |
|            | "                    | 1934-35 | 0.83                 | 10.1                          | 0.183                             | 0.101                | 1.01                              | 65-21-14                                                             | ..                         | ..                     | ..                                            | ..                                                | 25                            |
|            | "                    | 1935-36 | 0.82                 | 18.7                          | 0.193                             | 0.180                | 0.90                              | 77-13-10                                                             | ..                         | ..                     | ..                                            | ..                                                | 23                            |
|            | "                    | 1936-37 | 0.80                 | 13.5                          | 0.182                             | 0.150                | 0.82                              | 75-14-11                                                             | ..                         | ..                     | ..                                            | ..                                                | 25                            |
|            | "                    | 1937-38 | 0.82                 | 10.3                          | 0.170                             | 0.150                | 0.87                              | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 24                            |
| 12(b)      | Verum 202 (Akola)    | 1928-29 | 0.84                 | ..                            | 0.187                             | 0.174                | 0.93                              | ..                                                                   | 0.03                       | 79                     | 0.136                                         | 0.39                                              | 23                            |
|            | "                    | 1929-30 | 0.84                 | 13.1                          | 0.170                             | 0.171                | 0.97                              | ..                                                                   | 0.03                       | 89                     | 0.202                                         | 0.65                                              | 21                            |
|            | "                    | 1930-31 | 0.80                 | 13.1                          | 0.170                             | 0.108                | 0.99                              | ..                                                                   | 0.03                       | 70                     | 0.237                                         | 0.82                                              | 16                            |
|            | "                    | 1931-32 | 0.78                 | 14.1                          | 0.174                             | 0.170                | 0.98                              | ..                                                                   | 0.04                       | 75                     | 0.212                                         | 0.70                                              | 25                            |
|            | "                    | 1932-33 | 0.82                 | 13.1                          | 0.163                             | 0.150                | 0.92                              | ..                                                                   | 0.02                       | 80                     | 0.100                                         | 0.72                                              | 21                            |
|            | "                    | 1933-34 | 0.80                 | 15.2                          | 0.184                             | 0.108                | 0.91                              | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 21                            |
|            | "                    | 1934-35 | 0.80                 | 10.3                          | 0.105                             | 0.170                | 1.03                              | 60-17-14                                                             | ..                         | ..                     | ..                                            | ..                                                | 22                            |
|            | "                    | 1935-36 | 0.80                 | 18.7                          | 0.195                             | 0.181                | 0.93                              | 69-23-13                                                             | ..                         | ..                     | ..                                            | ..                                                | 20                            |
|            | "                    | 1936-37 | 0.79                 | 16.4                          | 0.195                             | 0.177                | 0.91                              | 63-20-21                                                             | ..                         | ..                     | ..                                            | ..                                                | 23                            |
|            | "                    | 1937-38 | 0.82                 | 10.3                          | 0.152                             | 0.134                | 0.88                              | 68-17-15                                                             | ..                         | ..                     | ..                                            | ..                                                | 24                            |
| 13         | V434 Akola           | 1933-34 | 0.83                 | 13.0                          | 0.172                             | 0.210                | 1.22                              | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 25                            |
|            | "                    | 1934-35 | 0.84                 | 15.0                          | 0.167                             | 0.150                | 0.95                              | 01-17-22                                                             | ..                         | ..                     | ..                                            | ..                                                | 30                            |
|            | "                    | 1935-36 | 0.87                 | 15.0                          | 0.170                             | 0.170                | 1.01                              | 02-20-12                                                             | ..                         | ..                     | ..                                            | ..                                                | 31                            |
|            | "                    | 1936-37 | 0.86                 | 11.8                          | 0.179                             | 0.170                | 1.00                              | 03-25-15                                                             | ..                         | ..                     | ..                                            | ..                                                | 27                            |
|            | "                    | 1937-38 | 0.80                 | 14.4                          | 0.169                             | 0.150                | 0.92                              | 02-19-10                                                             | ..                         | ..                     | ..                                            | ..                                                | 30                            |
| 14         | Lato Verum (Nagpur)  | 1930-31 | 0.80                 | 14.2                          | 0.184                             | 0.102                | 0.88                              | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 30                            |
|            | "                    | 1931-32 | 0.88                 | 13.8                          | 0.181                             | ..                   | ..                                | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 20                            |
|            | "                    | 1932-33 | 0.86                 | 12.8                          | 0.184                             | ..                   | ..                                | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 31                            |
|            | "                    | 1933-34 | 0.87                 | 13.1                          | 0.176                             | 0.101                | 1.00                              | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 34                            |
|            | "                    | 1934-35 | 0.80                 | 10.1                          | 0.189                             | 0.178                | 0.94                              | 70-14-10                                                             | ..                         | ..                     | ..                                            | ..                                                | 30                            |
|            | "                    | 1935-36 | 0.80                 | 10.0                          | 0.180                             | 0.180                | 1.00                              | 07-20-13                                                             | ..                         | ..                     | ..                                            | ..                                                | 33                            |
|            | "                    | 1936-37 | 0.87                 | 12.0                          | 0.170                             | 0.102                | 1.09                              | 63-19-18                                                             | ..                         | ..                     | ..                                            | ..                                                | 31                            |
|            | "                    | 1937-38 | 0.60                 | 14.1                          | 0.173                             | 0.102                | 0.94                              | 73-12-15                                                             | ..                         | ..                     | ..                                            | ..                                                | 33                            |
| 15         | Umti Bani            | 1926-27 | 0.82                 | ..                            | 0.200                             | 0.160                | 0.93                              | ..                                                                   | 0.07                       | 05                     | 0.160                                         | 0.40                                              | 24                            |
|            | "                    | 1927-28 | 0.82                 | ..                            | 0.192                             | 0.180                | 0.91                              | ..                                                                   | 0.03                       | 03                     | 0.183                                         | 0.51                                              | 24                            |
|            | "                    | 1928-29 | 0.84                 | ..                            | 0.185                             | 0.170                | 0.96                              | ..                                                                   | 0.03                       | 88                     | 0.190                                         | 0.57                                              | 22                            |
|            | "                    | 1929-30 | 0.81                 | 14.8                          | 0.152                             | 0.172                | 1.13                              | ..                                                                   | 0.04                       | 90                     | 0.185                                         | 0.80                                              | 27                            |
|            | "                    | 1930-31 | 0.80                 | 14.0                          | 0.175                             | 0.170                | 1.01                              | ..                                                                   | 0.07                       | 122                    | 0.189                                         | 0.52                                              | 28                            |
|            | "                    | 1931-32 | 0.70                 | 13.7                          | 0.172                             | 0.104                | 0.95                              | ..                                                                   | 0.06                       | 92                     | 0.254                                         | 0.86                                              | 27                            |
|            | "                    | 1932-33 | 0.91                 | 17.9                          | 0.175                             | 0.100                | 0.95                              | ..                                                                   | 0.05                       | 87                     | 0.181                                         | 0.59                                              | 23                            |
|            | "                    | 1933-34 | 0.83                 | 13.9                          | 0.160                             | 0.191                | 1.15                              | ..                                                                   | 0.03                       | 77                     | 0.178                                         | 0.05                                              | 29                            |
|            | "                    | 1934-35 | 0.82                 | 10.3                          | 0.169                             | 0.172                | 1.01                              | 07-15-18                                                             | ..                         | ..                     | ..                                            | ..                                                | 30                            |
|            | "                    | 1935-36 | 0.82                 | 12.3                          | 0.160                             | 0.178                | 1.12                              | 03-19-18                                                             | ..                         | ..                     | ..                                            | ..                                                | 34                            |
|            | "                    | 1936-37 | 0.82                 | 10.0                          | 0.183                             | 0.168                | 0.81                              | 01-18-21                                                             | ..                         | ..                     | ..                                            | ..                                                | 30                            |
|            | "                    | 1937-38 | 0.84                 | 14.3                          | 0.174                             | 0.140                | 0.80                              | 60-18-13                                                             | ..                         | ..                     | ..                                            | ..                                                | 33                            |
| 16         | Cambodia Co. 2 (440) | 1927-28 | 0.88                 | ..                            | 0.141                             | 0.123                | 0.87                              | ..                                                                   | 0.02                       | 103                    | 0.138                                         | 0.09                                              | 33                            |
|            | "                    | 1928-29 | 0.92                 | ..                            | 0.148                             | 0.100                | 0.97                              | ..                                                                   | 0.01                       | 90                     | 0.099                                         | 0.45                                              | 20                            |
|            | "                    | 1929-30 | 0.90                 | 17.0                          | 0.136                             | 0.124                | 0.91                              | ..                                                                   | 0.04                       | 116                    | 0.224                                         | 1.21                                              | 28                            |
|            | "                    | 1930-31 | 0.92                 | 10.7                          | 0.133                             | 0.110                | 0.88                              | ..                                                                   | 0.00                       | 04                     | 0.145                                         | 0.82                                              | 29                            |
|            | "                    | 1931-32 | 0.90                 | 18.0                          | 0.145                             | 0.110                | 0.80                              | ..                                                                   | 0.03                       | 87                     | 0.148                                         | 0.70                                              | 27                            |
|            | "                    | 1932-33 | 0.92                 | 18.7                          | 0.123                             | 0.090                | 0.73                              | ..                                                                   | 0.09                       | 110                    | ..                                            | ..                                                | 24                            |
|            | "                    | 1933-34 | 0.88                 | 22.5                          | 0.122                             | 0.098                | 0.80                              | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 20                            |
|            | "                    | 1934-35 | 0.92                 | 10.4                          | 0.132                             | 0.120                | 0.90                              | 40-15-45                                                             | ..                         | ..                     | ..                                            | ..                                                | 30                            |
|            | "                    | 1935-36 | 0.88                 | 10.4                          | 0.152                             | 0.124                | 0.81                              | 40-27-27                                                             | ..                         | ..                     | ..                                            | ..                                                | 30                            |
|            | "                    | 1936-37 | 0.92                 | 19.7                          | 0.136                             | 0.120                | 0.93                              | 50-21-20                                                             | ..                         | ..                     | ..                                            | ..                                                | 34                            |
|            | "                    | 1937-38 | 0.94                 | 17.0                          | 0.160                             | 0.122                | 0.82                              | 48-18-34                                                             | ..                         | ..                     | ..                                            | ..                                                | 33                            |
| 17         | Nandyal 14           | 1926-27 | 0.04                 | ..                            | 0.191                             | 0.223                | 1.17                              | ..                                                                   | 0.01                       | 46                     | 0.132                                         | 0.39                                              | 34                            |
|            | "                    | 1927-28 | 0.88                 | ..                            | 0.100                             | 0.230                | 1.17                              | ..                                                                   | 0.07                       | 50                     | 0.147                                         | 0.48                                              | 31                            |
|            | "                    | 1928-29 | 0.02                 | ..                            | 0.187                             | 0.236                | 1.20                              | ..                                                                   | 0.05                       | 60                     | 0.199                                         | 0.48                                              | 31                            |
|            | "                    | 1929-30 | 0.02                 | 15.9                          | 0.100                             | 0.232                | 1.33                              | ..                                                                   | 0.05                       | 70                     | 0.160                                         | 0.50                                              | 35                            |
|            | "                    | 1930-31 | 0.89                 | 14.7                          | 0.107                             | 0.210                | 1.25                              | ..                                                                   | 0.07                       | 67                     | 0.137                                         | 0.49                                              | 30                            |
|            | "                    | 1931-32 | 0.85                 | 10.4                          | 0.187                             | 0.226                | 1.21                              | ..                                                                   | 0.04                       | 90                     | 0.100                                         | 0.40                                              | 37                            |
|            | "                    | 1932-33 | 0.91                 | 18.0                          | 0.169                             | 0.222                | 1.45                              | ..                                                                   | 0.07                       | 80                     | ..                                            | ..                                                | 37                            |
|            | "                    | 1933-34 | 0.89                 | 13.0                          | 0.103                             | 0.222                | 1.30                              | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 40                            |
|            | "                    | 1934-35 | 0.04                 | 14.2                          | 0.171                             | 0.225                | 1.32                              | 04-23-13                                                             | ..                         | ..                     | ..                                            | ..                                                | 40                            |
|            | "                    | 1935-36 | 0.02                 | 10.0                          | 0.153                             | 0.212                | 1.30                              | 64-23-14                                                             | ..                         | ..                     | ..                                            | ..                                                | 40                            |
|            | "                    | 1936-37 | 0.80                 | 10.1                          | 0.163                             | 0.226                | 1.39                              | 70-11-13                                                             | ..                         | ..                     | ..                                            | ..                                                | 42                            |
|            | "                    | 1937-38 | 0.90                 | 18.2                          | 0.171                             | 0.210                | 1.26                              | 78-9-13                                                              | ..                         | ..                     | ..                                            | ..                                                | 35                            |
| 18         | Hagati 1             | 1928-29 | 0.84                 | ..                            | 0.207                             | 0.140                | 0.98                              | ..                                                                   | 0.05                       | 78                     | 0.164                                         | 0.38                                              | 24                            |
|            | "                    | 1929-30 | 0.84                 | 13.8                          | 0.175                             | 0.128                | 0.73                              | ..                                                                   | 0.71                       | 88                     | 0.129                                         | 0.42                                              | 27                            |
|            | "                    | 1930-31 | 0.91                 | 10.1                          | 0.100                             | 0.150                | 0.94                              | ..                                                                   | 0.06                       | 74                     | 0.128                                         | 0.40                                              | 30                            |
|            | "                    | 1931-32 | 0.86                 | 14.8                          | 0.172                             | 0.154                | 0.90                              | ..                                                                   | 0.05                       | 74                     | 0.133                                         | 0.45                                              | 30                            |
|            | "                    | 1932-33 | 0.82                 | 16.3                          | 0.175                             | 0.145                | 0.84                              | ..                                                                   | 0.70                       | 93                     | ..                                            | ..                                                | 26                            |
|            | "                    | 1933-34 | 0.80                 | 15.9                          | 0.171                             | 0.130                | 0.70                              | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 28                            |
|            | "                    | 1934-35 | 0.83                 | 15.5                          | 0.107                             | 0.130                | 0.78                              | 53-23-10                                                             | ..                         | ..                     | ..                                            | ..                                                | 29                            |
|            | "                    | 1935-36 | 0.90                 | 14.4                          | 0.170                             | 0.142                | 0.83                              | 65-25-10                                                             | ..                         | ..                     | ..                                            | ..                                                | 30                            |
|            | "                    | 1936-37 | 0.80                 | 12.2                          | 0.180                             | 0.142                | 0.79                              | 70-15-0                                                              | ..                         | ..                     | ..                                            | ..                                                | 30                            |
|            | "                    | 1937-38 | 0.88                 | 12.2                          | 0.181                             | 0.128                | 0.71                              | 72-20-8                                                              | ..                         | ..                     | ..                                            | ..                                                | 29                            |
| 19         | Karunganni           | 1926-27 | 0.85                 | ..                            | 0.192                             | 0.184                | 0.95                              | ..                                                                   | 0.05                       | 67                     | 0.170                                         | 0.40                                              | 24                            |
|            | "                    | 1927-28 | 0.85                 | ..                            | 0.183                             | 0.177                | 0.97                              | ..                                                                   | 0.02                       | 62                     | 0.150                                         | 0.47                                              | 24                            |
|            | "                    | 1928-29 | 0.82                 | ..                            | 0.180                             | 0.160                | 0.85                              | ..                                                                   | 0.70                       | 74                     | 0.184                                         | 0.53                                              | 20                            |
|            | "                    | 1929-30 | 0.84                 | 16.4                          | 0.181                             | 0.171                | 0.94                              | ..                                                                   | 0.78                       | 50                     | 0.215                                         | 0.66                                              | 23                            |
|            | "                    | 1930-31 | 0.82                 | 10.0                          | 0.101                             | 0.157                | 0.93                              | ..                                                                   | 0.06                       | 71                     | 0.110                                         | 0.46                                              | 28                            |
|            | "                    | 1931-32 | 0.82                 | 17.1                          | 0.181                             | 0.190                | 1.05                              | ..                                                                   | 0.07                       | 70                     | 0.196                                         | 0.00                                              | 21                            |
|            | "                    | 1932-33 | 0.86                 | 15.5                          | 0.107                             | 0.202                | 1.21                              | ..                                                                   | 0.09                       | 70                     | ..                                            | ..                                                | 23                            |
|            | "                    | 1933-34 | 0.82                 | 18.0                          | 0.104                             | 0.103                | 1.21                              | ..                                                                   | ..                         | ..                     | ..                                            | ..                                                | 23                            |
|            | "                    | 1934-35 | 0.83                 | 17.4                          | 0.107                             | 0.194                | 1.16                              | 52-16-32                                                             | ..                         | ..                     | ..                                            | ..                                                | 23                            |
|            | "                    | 1935-36 | 0.83                 | 16.6                          | 0.157                             | 0.164                | 1.04                              | 55-19-20                                                             | ..                         | ..                     | ..                                            | ..                                                | 34                            |
|            | "                    | 1936-37 | 0.84                 | 10.3                          | 0.170                             | 0.191                | 1.14                              | 65-16-10                                                             | ..                         | ..                     | ..                                            | ..                                                | 80                            |
|            | "                    | 1937-38 |                      |                               |                                   |                      |                                   |                                                                      |                            |                        |                                               |                                                   |                               |

TABLE 21 (contd.)—FIBRE PROPERTIES OF STANDARD INDIAN COTTONS, 1926-38.

## B.—METRIC UNITS.

| Report No. | Cotton,             | Season. | Fibre-<br>Length<br>(mm.) | Fibre-<br>Length<br>Irregularity<br>(%). | Fibre-<br>Weight<br>per cm.<br>(10-6<br>gm.) | Fibre-<br>Strength<br>(gm.) | Fibre-<br>Strength<br>(gm.)<br>+<br>Fibre-<br>Weight<br>(10-6<br>gm.) | Maturity<br>test<br>results (%)<br>(a) Mature.<br>(b) Half-<br>mature.<br>(c) Im-<br>mature. | Ribbon<br>Width.<br>(10-3 cm.) | Convola-<br>tions per<br>cm. | Fibre-<br>Rigidity<br>(10-2<br>dynes<br>× cm. 2) | Fibre-<br>Rigidity<br>+<br>(Fibre-<br>Weight) <sup>2</sup><br>× 10 <sup>10</sup> . | Highest<br>Standard<br>Warp<br>Counts. |
|------------|---------------------|---------|---------------------------|------------------------------------------|----------------------------------------------|-----------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------|------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------|
| 1          | Jayawant            | 1920-30 | 23.5                      | 11.4                                     | 2.01                                         | ..                          | ..                                                                    | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 40                                     |
|            | "                   | 1930-31 | 24.3                      | 16.3                                     | 1.66                                         | ..                          | ..                                                                    | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 87                                     |
|            | "                   | 1931-32 | 23.0                      | 13.0                                     | 2.05                                         | ..                          | ..                                                                    | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 40                                     |
|            | "                   | 1932-33 | 23.2                      | 14.2                                     | 2.17                                         | ..                          | ..                                                                    | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 39                                     |
|            | "                   | 1933-34 | 23.0                      | 10.1                                     | 1.94                                         | 4.08                        | 2.40                                                                  | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 39                                     |
|            | "                   | 1934-35 | 23.0                      | 16.0                                     | 1.60                                         | 4.18                        | 2.03                                                                  | 57-10-27                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 42                                     |
|            | "                   | 1935-36 | 23.8                      | 16.8                                     | 1.97                                         | 4.31                        | 2.53                                                                  | 55-24-21                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 42                                     |
|            | "                   | 1936-37 | 23.5                      | 13.0                                     | 2.11                                         | 4.74                        | 2.24                                                                  | 84-11-6                                                                                      | ..                             | ..                           | ..                                               | ..                                                                                 | 41                                     |
|            | "                   | 1937-38 | 24.2                      | 13.7                                     | 2.17                                         | 4.50                        | 2.10                                                                  | 67-10-14                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 39                                     |
| 2          | Gadag 1             | 1926-27 | 20.9                      | ..                                       | 2.00                                         | 4.00                        | 2.00                                                                  | ..                                                                                           | 1.60                           | 43                           | 2.63                                             | 0.47                                                                               | 38                                     |
|            | "                   | 1927-28 | 21.8                      | ..                                       | 1.87                                         | 4.20                        | 2.25                                                                  | ..                                                                                           | 1.67                           | 45                           | 2.72                                             | 0.73                                                                               | 38                                     |
|            | "                   | 1928-29 | 21.0                      | ..                                       | 1.82                                         | 4.00                        | 2.10                                                                  | ..                                                                                           | 1.60                           | 48                           | 2.47                                             | 0.55                                                                               | 30                                     |
|            | "                   | 1929-30 | 21.4                      | 13.0                                     | 1.95                                         | 3.60                        | 2.42                                                                  | ..                                                                                           | 1.61                           | 55                           | 2.80                                             | 1.03                                                                               | 32                                     |
|            | "                   | 1930-31 | 22.2                      | 15.0                                     | 1.71                                         | 3.62                        | 2.20                                                                  | ..                                                                                           | 1.67                           | 47                           | 2.73                                             | 0.93                                                                               | 35                                     |
|            | "                   | 1931-32 | 20.2                      | 15.5                                     | 1.72                                         | 4.04                        | 2.35                                                                  | ..                                                                                           | 1.64                           | 46                           | 3.63                                             | 1.23                                                                               | 26                                     |
|            | "                   | 1932-33 | 20.6                      | 17.6                                     | 1.40                                         | 4.30                        | 2.88                                                                  | ..                                                                                           | 1.60                           | 49                           | ..                                               | ..                                                                                 | 30                                     |
|            | "                   | 1933-34 | 20.6                      | 18.1                                     | 1.71                                         | 3.52                        | 2.00                                                                  | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 30                                     |
|            | "                   | 1934-35 | 20.1                      | 14.5                                     | 1.03                                         | 3.08                        | 2.41                                                                  | 61-27-12                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 37                                     |
|            | "                   | 1935-36 | 21.2                      | 13.0                                     | 1.80                                         | 4.23                        | 2.38                                                                  | 93-20-11                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 30                                     |
|            | "                   | 1936-37 | 20.4                      | 17.8                                     | 1.80                                         | 3.75                        | 2.02                                                                  | 83-14-3                                                                                      | ..                             | ..                           | ..                                               | ..                                                                                 | 30                                     |
|            | "                   | 1937-38 | 21.1                      | 14.1                                     | 1.68                                         | 3.00                        | 2.63                                                                  | 71-18-11                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 33                                     |
| 3          | Surat 1027 A. L. F. | 1926-27 | 24.8                      | ..                                       | 2.23                                         | 4.80                        | 2.17                                                                  | ..                                                                                           | 1.85                           | 38                           | 2.90                                             | 0.58                                                                               | 32                                     |
|            | "                   | 1927-28 | 24.0                      | ..                                       | 2.32                                         | 4.71                        | 2.04                                                                  | ..                                                                                           | 1.85                           | 20                           | 2.38                                             | 0.44                                                                               | 30                                     |
|            | "                   | 1928-29 | 24.4                      | ..                                       | 2.28                                         | 4.67                        | 2.05                                                                  | ..                                                                                           | 1.81                           | 25                           | 2.26                                             | 0.43                                                                               | 32                                     |
|            | "                   | 1929-30 | 24.0                      | 12.0                                     | 2.01                                         | 4.80                        | 2.42                                                                  | ..                                                                                           | 1.88                           | 18                           | 2.81                                             | 0.70                                                                               | 31                                     |
|            | "                   | 1930-31 | 23.8                      | 16.8                                     | 2.24                                         | 5.30                        | 2.37                                                                  | ..                                                                                           | 1.71                           | 25                           | 3.43                                             | 0.69                                                                               | 29                                     |
|            | "                   | 1931-32 | 22.8                      | 10.7                                     | 1.60                                         | 5.22                        | 2.60                                                                  | ..                                                                                           | 1.67                           | 24                           | 2.30                                             | 0.00                                                                               | 30                                     |
|            | "                   | 1932-33 | 23.0                      | 18.5                                     | 2.12                                         | 5.68                        | 2.64                                                                  | ..                                                                                           | 1.84                           | 21                           | ..                                               | ..                                                                                 | 31                                     |
|            | "                   | 1933-34 | 25.2                      | 17.2                                     | 1.88                                         | 5.20                        | 2.77                                                                  | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 37                                     |
|            | "                   | 1934-35 | 21.2                      | 10.5                                     | 2.04                                         | 6.27                        | 2.68                                                                  | 50-21-26                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 34                                     |
|            | "                   | 1935-36 | 25.0                      | 13.0                                     | 1.88                                         | 4.05                        | 2.44                                                                  | 45-28-27                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 34                                     |
|            | "                   | 1936-37 | 23.4                      | 21.4                                     | 2.15                                         | 4.50                        | 2.27                                                                  | 69-17-15                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 26                                     |
|            | "                   | 1937-38 | 24.8                      | 14.2                                     | 1.73                                         | 4.12                        | 2.38                                                                  | 40-27-27                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 23                                     |
| 4          | Wagad 8             | 1926-27 | 20.4                      | ..                                       | 2.05                                         | 5.00                        | 1.71                                                                  | ..                                                                                           | 1.83                           | 18                           | 3.07                                             | 0.46                                                                               | 14                                     |
|            | "                   | 1927-28 | 16.0                      | ..                                       | 2.10                                         | 3.52                        | 1.08                                                                  | ..                                                                                           | 1.82                           | 18                           | 2.18                                             | 0.40                                                                               | 16                                     |
|            | "                   | 1928-29 | 20.4                      | ..                                       | 2.07                                         | 4.00                        | 1.62                                                                  | ..                                                                                           | 1.63                           | 23                           | 2.42                                             | 0.34                                                                               | 15                                     |
|            | "                   | 1929-30 | 19.2                      | 10.1                                     | 2.18                                         | 3.77                        | 1.73                                                                  | ..                                                                                           | 1.66                           | 22                           | 2.46                                             | 0.52                                                                               | 12                                     |
|            | "                   | 1930-31 | 10.8                      | 11.3                                     | 2.87                                         | 4.00                        | 1.70                                                                  | ..                                                                                           | 1.64                           | 23                           | 5.10                                             | 0.63                                                                               | 12                                     |
|            | "                   | 1931-32 | 20.4                      | 17.0                                     | 2.52                                         | 4.88                        | 1.93                                                                  | ..                                                                                           | 1.88                           | 22                           | 4.14                                             | 0.95                                                                               | 10                                     |
|            | "                   | 1932-33 | 21.2                      | 14.1                                     | 2.07                                         | 4.88                        | 1.83                                                                  | ..                                                                                           | 2.03                           | 31                           | ..                                               | ..                                                                                 | 13                                     |
|            | "                   | 1933-34 | 20.2                      | 15.0                                     | 2.22                                         | 4.07                        | 1.83                                                                  | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 10                                     |
|            | "                   | 1934-35 | 20.0                      | 14.4                                     | 2.00                                         | 4.51                        | 1.74                                                                  | 49-23-24                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 14                                     |
|            | "                   | 1935-36 | 19.7                      | 15.0                                     | 2.40                                         | 3.97                        | 1.65                                                                  | 47-27-20                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 12                                     |
|            | "                   | 1936-37 | 20.6                      | 15.2                                     | 2.49                                         | 4.48                        | 1.82                                                                  | 69-10-23                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 13                                     |
|            | "                   | 1937-38 | 20.4                      | 12.8                                     | 2.30                                         | 4.03                        | 1.23                                                                  | 67-18-25                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 13                                     |
| 5          | Sind Sudhar         | 1930-31 | 24.8                      | 10.1                                     | 1.03                                         | ..                          | ..                                                                    | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 42                                     |
|            | "                   | 1931-32 | 23.4                      | 10.4                                     | 1.41                                         | ..                          | ..                                                                    | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 42                                     |
|            | "                   | 1932-33 | 23.0                      | 18.7                                     | 1.43                                         | ..                          | ..                                                                    | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 60                                     |
|            | "                   | 1933-34 | 20.0                      | 10.2                                     | 1.40                                         | ..                          | ..                                                                    | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 60                                     |
|            | "                   | 1934-35 | 21.0                      | 17.7                                     | 1.41                                         | 4.30                        | 2.05                                                                  | 50-30-14                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 43                                     |
|            | "                   | 1935-36 | 23.8                      | 22.0                                     | 1.65                                         | 4.21                        | 2.68                                                                  | 65-25-10                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 45                                     |
|            | "                   | 1936-37 | 24.2                      | 21.1                                     | 1.54                                         | 3.60                        | 2.38                                                                  | 69-21-10                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 42                                     |
|            | "                   | 1937-38 | 24.2                      | 10.4                                     | 1.45                                         | 3.74                        | 2.72                                                                  | 73-15-12                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 60                                     |
| 6          | Sind N. R.          | 1929-30 | 17.0                      | 14.1                                     | 3.80                                         | ..                          | ..                                                                    | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 6                                      |
|            | "                   | 1930-31 | 15.8                      | 16.0                                     | 3.71                                         | ..                          | ..                                                                    | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 6                                      |
|            | "                   | 1931-32 | 17.3                      | 13.3                                     | 8.43                                         | ..                          | ..                                                                    | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 6                                      |
|            | "                   | 1932-33 | 15.8                      | 13.5                                     | 9.34                                         | ..                          | ..                                                                    | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 6                                      |
|            | "                   | 1933-34 | 17.0                      | 13.0                                     | 3.27                                         | ..                          | ..                                                                    | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 6                                      |
|            | "                   | 1934-35 | 17.0                      | 14.7                                     | 2.63                                         | 0.02                        | 2.05                                                                  | 77-17-6                                                                                      | ..                             | ..                           | ..                                               | ..                                                                                 | 6                                      |
|            | "                   | 1935-36 | 17.0                      | 11.8                                     | 2.87                                         | 5.00                        | 1.74                                                                  | 60-20-8                                                                                      | ..                             | ..                           | ..                                               | ..                                                                                 | 7                                      |
|            | "                   | 1936-37 | 17.4                      | 13.1                                     | 3.02                                         | 5.21                        | 1.73                                                                  | 85-7-8                                                                                       | ..                             | ..                           | ..                                               | ..                                                                                 | 7                                      |
|            | "                   | 1937-38 | 18.0                      | 8.7                                      | 3.07                                         | 4.86                        | 1.60                                                                  | 80-9-6                                                                                       | ..                             | ..                           | ..                                               | ..                                                                                 | 7                                      |
| 7          | P. A. 4. F.         | 1926-27 | 16.8                      | ..                                       | 1.50                                         | 3.74                        | 2.40                                                                  | ..                                                                                           | 1.78                           | 41                           | 1.07                                             | 0.74                                                                               | 24                                     |
|            | "                   | 1927-28 | 20.1                      | ..                                       | 2.07                                         | 4.44                        | 2.14                                                                  | ..                                                                                           | 1.80                           | 40                           | 3.78                                             | 0.88                                                                               | 22                                     |
|            | "                   | 1928-29 | 10.8                      | ..                                       | 2.20                                         | 4.78                        | 2.17                                                                  | ..                                                                                           | 1.74                           | 30                           | 4.10                                             | 0.87                                                                               | 16                                     |
|            | "                   | 1929-30 | 20.7                      | 14.0                                     | 1.73                                         | 4.73                        | 2.73                                                                  | ..                                                                                           | 1.70                           | 42                           | 3.85                                             | 1.26                                                                               | 20                                     |
|            | "                   | 1930-31 | 16.0                      | 11.5                                     | 2.21                                         | 5.16                        | 2.33                                                                  | ..                                                                                           | 1.80                           | 43                           | 4.06                                             | 0.83                                                                               | 22                                     |
|            | "                   | 1931-32 | 18.4                      | 10.7                                     | 1.80                                         | 3.72                        | 2.07                                                                  | ..                                                                                           | 1.78                           | 38                           | 2.78                                             | 0.86                                                                               | 20                                     |
|            | "                   | 1932-33 | 10.7                      | 14.0                                     | 1.60                                         | 4.08                        | 2.57                                                                  | ..                                                                                           | 1.86                           | 43                           | ..                                               | ..                                                                                 | 25                                     |
|            | "                   | 1933-34 | 18.0                      | 12.4                                     | 1.50                                         | 4.14                        | 2.05                                                                  | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 24                                     |
|            | "                   | 1934-35 | 20.7                      | 13.3                                     | 1.50                                         | 3.87                        | 2.43                                                                  | 43-27-30                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 27                                     |
|            | "                   | 1935-36 | 20.4                      | 15.0                                     | 1.96                                         | 5.12                        | 2.01                                                                  | 49-28-23                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 20                                     |
|            | "                   | 1936-37 | 16.3                      | 15.2                                     | 1.75                                         | 4.75                        | 2.71                                                                  | 65-17-23                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 27                                     |
|            | "                   | 1937-38 | 20.0                      | 10.6                                     | 1.05                                         | 3.91                        | 2.39                                                                  | 30-21-37                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 24                                     |
| 8          | P. A. 286F          | 1926-27 | 24.0                      | ..                                       | 1.10                                         | 3.10                        | 2.81                                                                  | ..                                                                                           | 1.57                           | 35                           | 0.00                                             | 0.76                                                                               | 40                                     |
|            | "                   | 1927-28 | 23.8                      | ..                                       | 1.50                                         | 3.84                        | 3.42                                                                  | ..                                                                                           | 1.50                           | 47                           | 1.04                                             | 0.65                                                                               | 42                                     |
|            | "                   | 1928-29 | 24.5                      | ..                                       | 1.30                                         | 4.28                        | 3.15                                                                  | ..                                                                                           | 1.48                           | 48                           | 1.07                                             | 0.90                                                                               | 39                                     |
|            | "                   | 1929-30 | 25.4                      | 10.0                                     | 1.58                                         | 4.22                        | 2.07                                                                  | ..                                                                                           | 1.64                           | 57                           | 1.82                                             | 0.73                                                                               | 42                                     |
|            | "                   | 1930-31 | 24.4                      | 20.1                                     | 1.50                                         | 3.92                        | 2.40                                                                  | ..                                                                                           | 1.50                           | 53                           | 2.31                                             | 0.61                                                                               | 44                                     |
|            | "                   | 1931-32 | 22.8                      | 17.3                                     | 1.36                                         | 3.53                        | 2.60                                                                  | ..                                                                                           | 1.50                           | 47                           | 1.40                                             | 0.70                                                                               | 30                                     |
|            | "                   | 1932-33 | 21.2                      | 22.0                                     | 1.28                                         | 3.01                        | 2.82                                                                  | ..                                                                                           | 1.51                           | 47                           | 1.44                                             | 0.88                                                                               | 44                                     |
|            | "                   | 1933-34 | 23.0                      | 10.4                                     | 1.32                                         | 2.77                        | 2.10                                                                  | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 46                                     |
|            | "                   | 1934-35 | 21.0                      | 10.4                                     | 1.33                                         | 3.40                        | 2.50                                                                  | 61-20-20                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 44                                     |
|            | "                   | 1935-36 | 24.0                      | 10.1                                     | 1.70                                         | 4.70                        | 2.80                                                                  | 50-20-16                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 45                                     |
|            | "                   | 1936-37 | 21.2                      | 20.7                                     | 1.38                                         | 3.08                        | 2.88                                                                  | 39-28-34                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 44                                     |
|            | "                   | 1937-38 | 25.2                      | 20.5                                     | 1.28                                         | 3.44                        | 2.60                                                                  | 55-22-23                                                                                     | ..                             | ..                           | ..                                               | ..                                                                                 | 46                                     |
| 9          | Moffoni             | 1926-27 | 17.4                      | ..                                       | 3.04                                         | 4.00                        | 1.53                                                                  | ..                                                                                           | 1.06                           | 26                           | 4.33                                             | 0.40                                                                               | 8                                      |
|            | "                   | 1927-28 | 18.5                      | ..                                       | 3.74                                         | 5.54                        | 1.48                                                                  | ..                                                                                           | 2.22                           | 45                           | 8.20                                             | 0.50                                                                               | 8                                      |
|            | "                   | 1928-29 | 17.0                      | ..                                       | 3.38                                         | 5.10                        | 1.53                                                                  | ..                                                                                           | 1.03                           | 42                           | 9.10                                             | 0.80                                                                               | 7                                      |
|            | "                   | 1929-30 | 17.0                      | 0.8                                      | 3.01                                         | 4.74                        | 1.50                                                                  | ..                                                                                           | 2.05                           | 34                           | 0.65                                             | 0.78                                                                               | 8                                      |
|            | "                   | 1930-31 | 17.0                      | 11.0                                     | 3.20                                         | 4.83                        | 1.51                                                                  | ..                                                                                           | 1.03                           | 30                           | 7.51                                             | 0.73                                                                               | 8                                      |
|            | "                   | 1931-32 | 17.0                      | 11.0                                     | 2.71                                         | 5.33                        | 1.07                                                                  | ..                                                                                           | 1.84                           | 31                           | 0.36                                             | 0.80                                                                               | 10                                     |
|            | "                   | 1932-33 | 18.0                      | 11.5                                     | 8.00                                         | 4.88                        | 1.00                                                                  | ..                                                                                           | 1.00                           | 34                           | ..                                               | ..                                                                                 | 8                                      |
|            | "                   | 1933-34 | 17.4                      | 13.0                                     | 3.14                                         | 5.38                        | 1.72                                                                  | 73-21-6                                                                                      | ..                             | ..                           | ..                                               | ..                                                                                 | 6                                      |
|            | "                   | 1934-35 | 18.2                      | 12.0                                     | 2.68                                         | 5.30                        | 1.70                                                                  | 72-21-7                                                                                      | ..                             | ..                           | ..                                               | ..                                                                                 | 8                                      |
|            | "                   | 1935-36 | 10.0                      | 12.2                                     | 2.00                                         | 5.30                        | 1.33                                                                  | 80-13-7                                                                                      | ..                             | ..                           | ..                                               | ..                                                                                 | 7                                      |
|            | "                   | 1936-37 | 18.2                      | 14.4                                     | 3.44                                         | 4.58                        | 1.33                                                                  | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | 04                                     |
|            | "                   | 1937-38 | 10.4                      | 12.0                                     | 2.50                                         | 4.54                        | 1.77                                                                  | ..                                                                                           | ..                             | ..                           | ..                                               | ..                                                                                 | ..                                     |
| 10         | Aligarh A. 10       | 1926-27 | 10.8                      | ..                                       | 3.37                                         | 5.33                        | 1.58                                                                  | ..                                                                                           | 2.01                           | 31                           | 0.40                                             | 0.57                                                                               | 7                                      |
|            | "                   | 1927-28 | 17.8                      | ..                                       | 3.40                                         | 5.61                        | 1.06                                                                  | ..                                                                                           | 2.10                           | 28                           | 8.06                                             | 0.70                                                                               | 7                                      |
|            | "                   | 1928-29 | 18.2                      | ..                                       | 3.63                                         | 0.86                        | 1.04                                                                  | ..                                                                                           | 1.80                           | 27                           | 11.60                                            | 0.87                                                                               | 7                                      |
|            | "                   | 1929-30 | 17.4                      | 11.5                                     | 3.06                                         | 0.00                        | 1.70                                                                  | ..                                                                                           | 2.00                           | 20                           | 0.05                                             | 0.65                                                                               | 7                                      |
|            | "                   | 1930-31 | 10.8                      | 11.8                                     | 3.95                                         | 5.80                        | 1.72                                                                  | ..                                                                                           | 1.04                           | 27                           | 12.03                                            | 1.07                                                                               | 7                                      |
|            | "                   | 1931-32 | 10.0                      | 11.1                                     | 3.50                                         | 9.00                        | 1.72                                                                  | ..                                                                                           | 1.90                           | 27                           | 1                                                |                                                                                    |                                        |

TABLE 21 (contd.)—FIBRE PROPERTIES OF STANDARD INDIAN COTTONS, 1926-38.  
B.—METRIC UNITS—(contd.)

| Report No. | Cotton.              | Season. | Fibre Length (mm.) | Fibre Length Irregularity (%) | Fibre Weight per cm. (10-6 gm.) | Fibre Strength (gm.) | Fibre Strength + Fibre Weight (10-6 gm.) | Maturity test results (%) (a) Mature. (b) Half-mature. (c) Immature. | Ribbon Width. (10-3 cm.) | Convolution per cm. | Fibre Rigidity (10-4 dynes x cm.) | Fibre Rigidity + (Fibre Weight) x 1010. | Highest Standard Warp Counts. |
|------------|----------------------|---------|--------------------|-------------------------------|---------------------------------|----------------------|------------------------------------------|----------------------------------------------------------------------|--------------------------|---------------------|-----------------------------------|-----------------------------------------|-------------------------------|
| 10         | Allgarh A. 10        | 1932-33 | 17.0               | 12.5                          | 3.24                            | 0.52                 | 2.01                                     | ..                                                                   | 2.01                     | 32                  | ..                                | ..                                      | 6                             |
|            | "                    | 1933-34 | 16.3               | 14.5                          | 2.93                            | 0.58                 | 1.84                                     | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 6                             |
|            | "                    | 1934-35 | 16.8               | 13.0                          | 3.02                            | 0.24                 | 2.07                                     | 78-12-10                                                             | ..                       | ..                  | ..                                | ..                                      | 6                             |
|            | "                    | 1935-36 | 16.8               | 11.4                          | 2.98                            | 0.84                 | 1.99                                     | 77-15-8                                                              | ..                       | ..                  | ..                                | ..                                      | 6                             |
|            | "                    | 1936-37 | 16.8               | 13.5                          | 3.08                            | 0.62                 | 1.82                                     | 67-16-18                                                             | ..                       | ..                  | ..                                | ..                                      | 6                             |
|            | "                    | 1937-38 | 17.0               | 13.6                          | 3.15                            | 0.60                 | 1.78                                     | 88-0-6                                                               | ..                       | ..                  | ..                                | ..                                      | 6                             |
| 11         | G. 40½ (U. P.)       | 1931-32 | 20.3               | 13.9                          | 2.28                            | 5.17                 | 2.27                                     | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 15                            |
|            | "                    | 1932-33 | 20.0               | 15.0                          | 2.18                            | 5.25                 | 2.41                                     | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 14                            |
|            | "                    | 1933-34 | 19.2               | 11.8                          | 2.02                            | 4.80                 | 2.37                                     | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 18                            |
|            | "                    | 1934-35 | 20.6               | 15.5                          | 1.83                            | 4.04                 | 2.20                                     | 63-21-16                                                             | ..                       | ..                  | ..                                | ..                                      | 22                            |
|            | "                    | 1935-36 | 20.0               | 17.6                          | 2.00                            | 4.46                 | 2.10                                     | 63-25-12                                                             | ..                       | ..                  | ..                                | ..                                      | 16                            |
|            | "                    | 1936-37 | 20.8               | 15.6                          | 1.88                            | 4.30                 | 2.29                                     | 63-15-22                                                             | ..                       | ..                  | ..                                | ..                                      | 28                            |
|            | "                    | 1937-38 | 20.4               | 13.7                          | 2.22                            | 4.08                 | 2.11                                     | 81-9-10                                                              | ..                       | ..                  | ..                                | ..                                      | 19                            |
| 12 (a)     | Verum 262 (Nagpur)   | 1928-29 | 21.7               | ..                            | 2.40                            | 5.64                 | 2.35                                     | ..                                                                   | 1.58                     | 28                  | 3.46                              | 0.80                                    | 26                            |
|            | "                    | 1929-30 | 20.0               | 12.6                          | 1.85                            | 4.98                 | 2.69                                     | ..                                                                   | 1.64                     | 36                  | 3.31                              | 1.14                                    | 21                            |
|            | "                    | 1930-31 | 21.0               | 12.0                          | 2.07                            | 5.56                 | 2.68                                     | ..                                                                   | 1.54                     | 32                  | 3.22                              | 0.76                                    | 26                            |
|            | "                    | 1931-32 | 21.0               | 15.2                          | 1.97                            | 5.30                 | 2.66                                     | ..                                                                   | 1.60                     | 27                  | 3.43                              | 0.88                                    | 25                            |
|            | "                    | 1932-33 | 21.0               | 14.7                          | 2.01                            | 5.04                 | 2.51                                     | ..                                                                   | 1.59                     | 35                  | 4.40                              | 1.09                                    | 23                            |
|            | "                    | 1933-34 | 19.6               | 15.0                          | 2.09                            | 4.76                 | 2.28                                     | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 24                            |
|            | "                    | 1934-35 | 21.0               | 16.1                          | 2.04                            | 5.42                 | 2.66                                     | 73-14-13                                                             | ..                       | ..                  | ..                                | ..                                      | 28                            |
|            | "                    | 1935-36 | 21.0               | 18.7                          | 2.15                            | 5.27                 | 2.45                                     | 65-21-14                                                             | ..                       | ..                  | ..                                | ..                                      | 23                            |
|            | "                    | 1936-37 | 20.8               | 13.5                          | 2.04                            | 4.20                 | 2.08                                     | 77-13-10                                                             | ..                       | ..                  | ..                                | ..                                      | 25                            |
|            | "                    | 1937-38 | 21.0               | 16.3                          | 2.00                            | 4.45                 | 2.22                                     | 75-14-11                                                             | ..                       | ..                  | ..                                | ..                                      | 24                            |
| 12 (b)     | Verum 262 (Akola)    | 1928-29 | 21.2               | ..                            | 2.08                            | 4.95                 | 2.38                                     | ..                                                                   | 1.60                     | 31                  | 2.43                              | 0.56                                    | 23                            |
|            | "                    | 1929-30 | 21.4               | 13.1                          | 1.96                            | 4.85                 | 2.47                                     | ..                                                                   | 1.61                     | 35                  | 3.63                              | 0.94                                    | 21                            |
|            | "                    | 1930-31 | 20.2               | 13.1                          | 1.90                            | 4.77                 | 2.51                                     | ..                                                                   | 1.66                     | 31                  | 4.25                              | 1.18                                    | 18                            |
|            | "                    | 1931-32 | 19.7               | 14.1                          | 1.94                            | 4.64                 | 2.49                                     | ..                                                                   | 1.64                     | 29                  | 3.90                              | 1.01                                    | 21                            |
|            | "                    | 1932-33 | 21.0               | 13.1                          | 1.82                            | 4.26                 | 2.34                                     | ..                                                                   | 1.58                     | 34                  | 3.40                              | 1.03                                    | 25                            |
|            | "                    | 1933-34 | 20.3               | 15.2                          | 2.06                            | 4.70                 | 2.31                                     | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 21                            |
|            | "                    | 1934-35 | 20.2               | 16.9                          | 1.84                            | 5.08                 | 2.76                                     | 69-17-14                                                             | ..                       | ..                  | ..                                | ..                                      | 22                            |
|            | "                    | 1935-36 | 20.4               | 18.7                          | 2.19                            | 5.13                 | 2.39                                     | 59-23-13                                                             | ..                       | ..                  | ..                                | ..                                      | 20                            |
|            | "                    | 1936-37 | 20.1               | 16.4                          | 2.18                            | 5.01                 | 2.30                                     | 59-20-21                                                             | ..                       | ..                  | ..                                | ..                                      | 23                            |
|            | "                    | 1937-38 | 20.8               | 16.3                          | 1.70                            | 3.78                 | 2.23                                     | 68-17-15                                                             | ..                       | ..                  | ..                                | ..                                      | 24                            |
| 13         | V. 434 (Akola)       | 1933-34 | 22.2               | 13.0                          | 1.62                            | 5.94                 | 3.10                                     | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 25                            |
|            | "                    | 1934-35 | 21.2               | 16.0                          | 1.85                            | 4.50                 | 2.44                                     | 01-17-22                                                             | ..                       | ..                  | ..                                | ..                                      | 30                            |
|            | "                    | 1935-36 | 22.1               | 15.0                          | 1.90                            | 5.00                 | 2.63                                     | 02-20-12                                                             | ..                       | ..                  | ..                                | ..                                      | 31                            |
|            | "                    | 1936-37 | 21.8               | 11.8                          | 2.01                            | 5.08                 | 2.52                                     | 63-25-12                                                             | ..                       | ..                  | ..                                | ..                                      | 27                            |
|            | "                    | 1937-38 | 21.8               | 14.4                          | 1.69                            | 4.42                 | 2.34                                     | 02-19-19                                                             | ..                       | ..                  | ..                                | ..                                      | 36                            |
| 14         | Late Verum (Nagpur)  | 1930-31 | 22.8               | 14.2                          | 2.06                            | 4.60                 | 2.23                                     | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 36                            |
|            | "                    | 1931-32 | 22.6               | 13.8                          | 2.02                            | ..                   | ..                                       | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 29                            |
|            | "                    | 1932-33 | 22.0               | 12.8                          | 2.05                            | ..                   | ..                                       | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 31                            |
|            | "                    | 1933-34 | 22.1               | 16.1                          | 1.95                            | 5.41                 | 2.77                                     | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 34                            |
|            | "                    | 1934-35 | 21.8               | 10.1                          | 2.10                            | 5.05                 | 2.40                                     | 70-14-16                                                             | ..                       | ..                  | ..                                | ..                                      | 36                            |
|            | "                    | 1935-36 | 21.7               | 10.6                          | 2.08                            | 5.27                 | 2.53                                     | 67-20-13                                                             | ..                       | ..                  | ..                                | ..                                      | 33                            |
|            | "                    | 1936-37 | 22.1               | 12.6                          | 1.96                            | 5.42                 | 2.70                                     | 63-19-16                                                             | ..                       | ..                  | ..                                | ..                                      | 31                            |
|            | "                    | 1937-38 | 21.8               | 14.1                          | 1.93                            | 4.59                 | 2.38                                     | 73-12-16                                                             | ..                       | ..                  | ..                                | ..                                      | 33                            |
| 15         | Umri Bani            | 1926-27 | 20.7               | ..                            | 2.23                            | 5.28                 | 2.37                                     | ..                                                                   | 1.70                     | 26                  | 2.87                              | 0.53                                    | 24                            |
|            | "                    | 1927-28 | 20.7               | ..                            | 2.15                            | 5.10                 | 2.37                                     | ..                                                                   | 1.60                     | 37                  | 3.39                              | 0.73                                    | 24                            |
|            | "                    | 1928-29 | 21.2               | ..                            | 2.07                            | 5.02                 | 2.42                                     | ..                                                                   | 1.61                     | 34                  | 3.52                              | 0.82                                    | 22                            |
|            | "                    | 1929-30 | 20.4               | 14.8                          | 1.70                            | 4.86                 | 2.86                                     | ..                                                                   | 1.62                     | 36                  | 3.31                              | 1.15                                    | 27                            |
|            | "                    | 1930-31 | 20.4               | 14.0                          | 1.96                            | 5.06                 | 2.55                                     | ..                                                                   | 1.62                     | 48                  | 3.39                              | 0.89                                    | 28                            |
|            | "                    | 1931-32 | 20.6               | 13.7                          | 1.92                            | 4.64                 | 2.41                                     | ..                                                                   | 1.70                     | 48                  | 3.39                              | 1.23                                    | 27                            |
|            | "                    | 1932-33 | 20.6               | 17.9                          | 1.95                            | 4.03                 | 2.46                                     | ..                                                                   | 1.68                     | 30                  | 4.55                              | 0.85                                    | 28                            |
|            | "                    | 1933-34 | 21.0               | 13.9                          | 1.85                            | 5.40                 | 2.92                                     | ..                                                                   | 1.65                     | 34                  | 3.24                              | 0.94                                    | 29                            |
|            | "                    | 1934-35 | 20.7               | 10.3                          | 1.83                            | 4.87                 | 2.59                                     | 67-15-18                                                             | ..                       | ..                  | ..                                | ..                                      | 30                            |
|            | "                    | 1935-36 | 20.7               | 12.3                          | 1.80                            | 5.06                 | 2.81                                     | 63-19-13                                                             | ..                       | ..                  | ..                                | ..                                      | 34                            |
|            | "                    | 1936-37 | 20.8               | 16.6                          | 2.10                            | 4.48                 | 2.13                                     | 61-18-21                                                             | ..                       | ..                  | ..                                | ..                                      | 30                            |
|            | "                    | 1937-38 | 21.2               | 14.3                          | 1.64                            | 4.26                 | 2.17                                     | 69-16-13                                                             | ..                       | ..                  | ..                                | ..                                      | 33                            |
| 16         | Gambodia Co. 2 (440) | 1927-28 | 22.5               | ..                            | 1.57                            | 3.48                 | 2.22                                     | ..                                                                   | 1.60                     | 43                  | 2.47                              | 1.00                                    | 33                            |
|            | "                    | 1928-29 | 23.4               | ..                            | 1.05                            | 2.83                 | 1.71                                     | ..                                                                   | 1.56                     | 35                  | 1.77                              | 0.65                                    | 20                            |
|            | "                    | 1929-30 | 22.8               | 17.0                          | 1.51                            | 3.60                 | 2.32                                     | ..                                                                   | 1.63                     | 40                  | 4.02                              | 1.76                                    | 28                            |
|            | "                    | 1930-31 | 23.5               | 19.7                          | 1.48                            | 3.32                 | 2.24                                     | ..                                                                   | 1.66                     | 37                  | 2.60                              | 1.19                                    | 29                            |
|            | "                    | 1931-32 | 23.0               | 18.6                          | 1.02                            | 3.30                 | 2.03                                     | ..                                                                   | 1.60                     | 34                  | 2.64                              | 1.00                                    | 27                            |
|            | "                    | 1932-33 | 23.5               | 18.7                          | 1.33                            | 2.72                 | 1.97                                     | ..                                                                   | 1.72                     | 47                  | ..                                | ..                                      | 24                            |
|            | "                    | 1933-34 | 22.4               | 22.5                          | 1.36                            | 2.77                 | 2.04                                     | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 26                            |
|            | "                    | 1934-35 | 23.4               | 19.4                          | 1.47                            | 3.59                 | 2.44                                     | 40-15-45                                                             | ..                       | ..                  | ..                                | ..                                      | 30                            |
|            | "                    | 1935-36 | 22.4               | 19.4                          | 1.70                            | 3.60                 | 2.00                                     | 40-27-27                                                             | ..                       | ..                  | ..                                | ..                                      | 36                            |
|            | "                    | 1936-37 | 23.4               | 19.7                          | 1.51                            | 3.58                 | 2.35                                     | 50-21-29                                                             | ..                       | ..                  | ..                                | ..                                      | 33                            |
|            | "                    | 1937-38 | 23.8               | 17.9                          | 1.07                            | 3.48                 | 2.03                                     | 43-18-34                                                             | ..                       | ..                  | ..                                | ..                                      | 33                            |
| 17         | Nandyal 14           | 1926-27 | 23.8               | ..                            | 2.13                            | 0.32                 | 2.07                                     | ..                                                                   | 1.55                     | 18                  | 2.55                              | 0.50                                    | 34                            |
|            | "                    | 1927-28 | 22.4               | ..                            | 2.18                            | 0.50                 | 2.08                                     | ..                                                                   | 1.72                     | 22                  | 2.64                              | 0.50                                    | 31                            |
|            | "                    | 1928-29 | 23.2               | ..                            | 2.08                            | 0.71                 | 3.23                                     | ..                                                                   | 1.00                     | 24                  | 3.02                              | 0.70                                    | 31                            |
|            | "                    | 1929-30 | 23.2               | 15.9                          | 1.89                            | 0.66                 | 3.49                                     | ..                                                                   | 1.66                     | 27                  | 3.03                              | 0.85                                    | 35                            |
|            | "                    | 1930-31 | 22.0               | 14.7                          | 1.88                            | 5.94                 | 3.16                                     | ..                                                                   | 1.76                     | 26                  | 2.46                              | 0.71                                    | 35                            |
|            | "                    | 1931-32 | 21.0               | 19.4                          | 2.09                            | 0.43                 | 3.08                                     | ..                                                                   | 1.62                     | 24                  | 2.83                              | 0.66                                    | 30                            |
|            | "                    | 1932-33 | 23.2               | 13.9                          | 1.74                            | 0.36                 | 3.02                                     | ..                                                                   | 1.71                     | 32                  | ..                                | ..                                      | 37                            |
|            | "                    | 1933-34 | 22.9               | 13.9                          | 1.82                            | 0.28                 | 3.45                                     | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 37                            |
|            | "                    | 1934-35 | 23.8               | 14.2                          | 1.91                            | 6.38                 | 3.34                                     | 04-23-13                                                             | ..                       | ..                  | ..                                | ..                                      | 46                            |
|            | "                    | 1935-36 | 23.2               | 16.0                          | 1.71                            | 6.02                 | 3.52                                     | 04-23-14                                                             | ..                       | ..                  | ..                                | ..                                      | 40                            |
|            | "                    | 1936-37 | 22.0               | 10.1                          | 1.82                            | 0.40                 | 3.52                                     | 70-11-13                                                             | ..                       | ..                  | ..                                | ..                                      | 42                            |
|            | "                    | 1937-38 | 22.8               | 18.2                          | 1.91                            | 6.10                 | 3.19                                     | 78-9-13                                                              | ..                       | ..                  | ..                                | ..                                      | 35                            |
| 18         | Hagar 1              | 1928-29 | 21.4               | ..                            | 2.31                            | 3.96                 | 1.72                                     | ..                                                                   | 1.65                     | 31                  | 2.84                              | 0.55                                    | 24                            |
|            | "                    | 1929-30 | 21.3               | 13.8                          | 1.90                            | 3.64                 | 1.85                                     | ..                                                                   | 1.79                     | 35                  | 2.32                              | 0.60                                    | 27                            |
|            | "                    | 1930-31 | 23.1               | 10.1                          | 1.86                            | 4.42                 | 2.33                                     | ..                                                                   | 1.07                     | 29                  | 2.20                              | 0.60                                    | 30                            |
|            | "                    | 1931-32 | 22.0               | 14.8                          | 1.92                            | 4.38                 | 2.21                                     | ..                                                                   | 1.04                     | 29                  | 2.38                              | 0.65                                    | 30                            |
|            | "                    | 1932-33 | 21.0               | 10.3                          | 1.96                            | 4.10                 | 2.12                                     | ..                                                                   | 1.77                     | 37                  | ..                                | ..                                      | 25                            |
|            | "                    | 1933-34 | 20.3               | 15.9                          | 1.91                            | 3.70                 | 1.92                                     | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 28                            |
|            | "                    | 1934-35 | 21.0               | 15.5                          | 1.87                            | 3.09                 | 1.97                                     | 53-23-19                                                             | ..                       | ..                  | ..                                | ..                                      | 29                            |
|            | "                    | 1935-36 | 22.8               | 14.4                          | 1.90                            | 4.02                 | 2.12                                     | 05-23-10                                                             | ..                       | ..                  | ..                                | ..                                      | 30                            |
|            | "                    | 1936-37 | 21.8               | 12.2                          | 2.02                            | 4.02                 | 1.99                                     | 79-15-6                                                              | ..                       | ..                  | ..                                | ..                                      | 30                            |
|            | "                    | 1937-38 | 22.2               | 17.2                          | 2.01                            | 3.62                 | 1.80                                     | 72-20-8                                                              | ..                       | ..                  | ..                                | ..                                      | 29                            |
| 19         | Karunganel O 7       | 1926-27 | 21.6               | ..                            | 2.15                            | 5.20                 | 2.42                                     | ..                                                                   | 1.65                     | 22                  | 3.05                              | 0.66                                    | 24                            |
|            | "                    | 1927-28 | 21.6               | ..                            | 2.05                            | 5.04                 | 2.40                                     | ..                                                                   | 1.58                     | 24                  | 2.86                              | 0.67                                    | 24                            |
|            | "                    | 1928-29 | 20.7               | ..                            | 2.09                            | 4.51                 | 2.10                                     | ..                                                                   | 1.79                     | 29                  | 3.36                              | 0.70                                    | 20                            |
|            | "                    | 1929-30 | 21.2               | 16.4                          | 2.02                            | 4.89                 | 2.46                                     | ..                                                                   | 1.98                     | 20                  | 3.84                              | 0.94                                    | 23                            |
|            | "                    | 1930-31 | 20.8               | 16.6                          | 1.80                            | 4.45                 | 2.47                                     | ..                                                                   | 1.68                     | 28                  | 2.13                              | 0.66                                    | 26                            |
|            | "                    | 1931-32 | 20.8               | 17.1                          | 2.02                            | 5.38                 | 2.66                                     | ..                                                                   | 1.69                     | 28                  | 3.52                              | 0.86                                    | 21                            |
|            | "                    | 1932-33 | 21.8               | 15.5                          | 1.86                            | 5.74                 | 3.09                                     | ..                                                                   | 1.70                     | 27                  | ..                                | ..                                      | 23                            |
|            | "                    | 1933-34 | 20.8               | 18.6                          | 1.83                            | 5.62                 | 3.07                                     | ..                                                                   | ..                       | ..                  | ..                                | ..                                      | 23                            |
|            | "                    | 1934-35 | 21.1               | 17.4                          | 1.87                            | 5.56                 | 2.94                                     | 52-16-32                                                             | ..                       | ..                  | ..                                | ..                                      | 23                            |
|            | "                    | 1935-36 | 21.0               | 16.0                          | 1.75                            | 4.66                 | 2.66                                     | 55-19-20                                                             | ..                       | ..                  | ..                                | ..                                      | 31                            |
|            | "                    | 1936-37 | 21.2               | 10.3                          | 1.96                            | 5.50                 | 2.89                                     | 65-16-19                                                             | ..                       | ..                  | ..                                | ..                                      | 36                            |
|            | "                    | 1937-38 | 21.4               | 16.1                          | 2.01                            | 4.54                 | 2.25                                     | 72-14-14                                                             | ..                       | ..                  | ..                                | ..                                      | 36                            |
| 20         | Kollpatti 1          | 1936-37 | 21.8               | 17.0                          | 1.63                            | 4.86</               |                                          |                                                                      |                          |                     |                                   |                                         |                               |

TABLE 22—SUMMARY OF SPINNING TEST RESULTS FOR STANDARD INDIAN COTTONS, 1928-38.  
(a) BOMBAY AND SIND COTTONS.

| Sample No. | Cotton.           | Season. | Counts Nominal. | WASTE PERCENTAGES. |                 |                |             | RING FRAME PARTICULARS.*                  |                              |        |                 | YARN TEST RESULTS. |                 |                            |                |                |                             |                        |            |         |                 | RELATIVE HUMIDITY (%). | Highest Standard Wap Counts. |                            |                       |                |                             |                   |                |                        |              |
|------------|-------------------|---------|-----------------|--------------------|-----------------|----------------|-------------|-------------------------------------------|------------------------------|--------|-----------------|--------------------|-----------------|----------------------------|----------------|----------------|-----------------------------|------------------------|------------|---------|-----------------|------------------------|------------------------------|----------------------------|-----------------------|----------------|-----------------------------|-------------------|----------------|------------------------|--------------|
|            |                   |         |                 | Blow Room Loss.    | Card Room Loss. | Spinning Loss. | Total Loss. | Yarn Breakages per 100 spindles per hour. | Front Roller Speed, R. P. M. | Draft. | Turns per Inch. | LEA.               |                 |                            | BALLISTIC.     |                |                             | SINGLES THREAD.        |            |         |                 |                        |                              |                            |                       |                |                             |                   |                |                        |              |
|            |                   |         |                 |                    |                 |                |             |                                           |                              |        |                 | Counts Actual.     | Strength (lbs.) | Strength Irregularity (%). | Count-Strength | Counts Actual. | Work of Rupture (inch-lbs.) | Work Irregularity (%). | Count-Work | Counts. | Strength (ozs.) |                        |                              | Strength Irregularity (%). | Wetness (percentage). | Extension (%). | Extension Irregularity (%). | Evenness (Class). | Mega per yard. | Turns per Inch Actual. | Sizing Room. |
| 583        | Jaywant           | 1929-30 | 20              | 10.6               | 0.3             | 0.1            | 11.0        | 2                                         | 101                          | 4.10   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 584        | "                 | 1930-31 | 20              | 9.7                | 0.4             | 0.1            | 10.2        | 2                                         | 107                          | 4.10   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 1083       | "                 | 1931-32 | 20              | 8.7                | 0.3             | 0.1            | 9.1         | 10                                        | 109                          | 4.10   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 1084       | "                 | 1932-33 | 20              | 11.2               | 0.4             | 0.1            | 12.7        | 11                                        | 109                          | 4.10   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 2161       | "                 | 1933-34 | 20              | 10.4               | 0.3             | 0.1            | 11.8        | 10                                        | 107                          | 4.10   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 2162       | "                 | 1934-35 | 20              | 10.4               | 0.3             | 0.1            | 11.8        | 10                                        | 107                          | 4.10   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 2163       | "                 | 1935-36 | 20              | 10.4               | 0.3             | 0.1            | 11.8        | 10                                        | 107                          | 4.10   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 3176       | "                 | 1936-37 | 20              | 10.4               | 0.3             | 0.1            | 11.8        | 10                                        | 107                          | 4.10   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 3177       | "                 | 1937-38 | 20              | 10.4               | 0.3             | 0.1            | 11.8        | 10                                        | 107                          | 4.10   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 4056       | "                 | 1938-39 | 20              | 10.4               | 0.3             | 0.1            | 11.8        | 10                                        | 107                          | 4.10   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 513        | Gadag 1           | 1929-30 | 20              | 8.7                | 0.3             | 0.1            | 9.1         | 44                                        | 101                          | 4.30   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 719        | "                 | 1930-31 | 20              | 10.7               | 0.4             | 0.1            | 11.2        | 10                                        | 106                          | 4.30   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 1016       | "                 | 1931-32 | 20              | 7.5                | 0.3             | 0.1            | 8.3         | 10                                        | 107                          | 4.30   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 1305       | "                 | 1932-33 | 20              | 7.5                | 0.3             | 0.1            | 8.3         | 10                                        | 107                          | 4.30   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 1740       | "                 | 1933-34 | 20              | 7.5                | 0.3             | 0.1            | 8.3         | 10                                        | 107                          | 4.30   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 2294       | "                 | 1934-35 | 20              | 7.5                | 0.3             | 0.1            | 8.3         | 10                                        | 107                          | 4.30   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 2707       | "                 | 1935-36 | 20              | 7.5                | 0.3             | 0.1            | 8.3         | 10                                        | 107                          | 4.30   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 3135       | "                 | 1936-37 | 20              | 7.5                | 0.3             | 0.1            | 8.3         | 10                                        | 107                          | 4.30   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 3136       | "                 | 1937-38 | 20              | 7.5                | 0.3             | 0.1            | 8.3         | 10                                        | 107                          | 4.30   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 4060       | "                 | 1938-39 | 20              | 7.5                | 0.3             | 0.1            | 8.3         | 10                                        | 107                          | 4.30   | 10.83           | 19.8               | 108.5           | 4.9                        | 2,088          | 20.1           | 116.8                       | 4.2                    | 2,088      | 19.7    | 15.0            | 9.8                    | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 88             | 85                     | 38           |
| 497        | Surat 1027 A.L.E. | 1929-30 | 20              | 4.6                | 7.5             | 0.2            | 12.3        | 17                                        | 100                          | 4.44   | 10.85           | 19.4               | 97.1            | 4.2                        | 1,893          | 19.4           | 133.6                       | 3.4                    | 1,893      | 19.9    | 12.5            | 11.2                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 32           |
| 716        | "                 | 1930-31 | 20              | 3.3                | 6.0             | 0.2            | 9.5         | 8                                         | 200                          | 4.55   | 10.85           | 19.4               | 97.1            | 4.2                        | 1,893          | 19.4           | 133.6                       | 3.4                    | 1,893      | 19.9    | 12.5            | 11.2                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 32           |
| 1018       | "                 | 1931-32 | 20              | 3.3                | 6.0             | 0.2            | 9.5         | 8                                         | 200                          | 4.55   | 10.85           | 19.4               | 97.1            | 4.2                        | 1,893          | 19.4           | 133.6                       | 3.4                    | 1,893      | 19.9    | 12.5            | 11.2                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 32           |
| 1313       | "                 | 1932-33 | 20              | 4.7                | 6.8             | 0.2            | 11.5        | 39                                        | 106                          | 4.32   | 10.85           | 19.7               | 83.1            | 5.0                        | 1,833          | 18.0           | 122.9                       | 3.0                    | 1,833      | 20.0    | 11.2            | 11.1                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 32           |
| 1736       | "                 | 1933-34 | 20              | 3.6                | 6.8             | 0.2            | 10.4        | 10                                        | 106                          | 4.32   | 10.85           | 19.7               | 83.1            | 5.0                        | 1,833          | 18.0           | 122.9                       | 3.0                    | 1,833      | 20.0    | 11.2            | 11.1                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 32           |
| 2254       | "                 | 1934-35 | 20              | 3.6                | 6.8             | 0.2            | 10.4        | 10                                        | 106                          | 4.32   | 10.85           | 19.7               | 83.1            | 5.0                        | 1,833          | 18.0           | 122.9                       | 3.0                    | 1,833      | 20.0    | 11.2            | 11.1                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 32           |
| 3127       | "                 | 1935-36 | 20              | 3.6                | 6.8             | 0.2            | 10.4        | 10                                        | 106                          | 4.32   | 10.85           | 19.7               | 83.1            | 5.0                        | 1,833          | 18.0           | 122.9                       | 3.0                    | 1,833      | 20.0    | 11.2            | 11.1                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 32           |
| 3128       | "                 | 1936-37 | 20              | 3.6                | 6.8             | 0.2            | 10.4        | 10                                        | 106                          | 4.32   | 10.85           | 19.7               | 83.1            | 5.0                        | 1,833          | 18.0           | 122.9                       | 3.0                    | 1,833      | 20.0    | 11.2            | 11.1                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 32           |
| 3564       | "                 | 1937-38 | 20              | 3.6                | 6.8             | 0.2            | 10.4        | 10                                        | 106                          | 4.32   | 10.85           | 19.7               | 83.1            | 5.0                        | 1,833          | 18.0           | 122.9                       | 3.0                    | 1,833      | 20.0    | 11.2            | 11.1                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 32           |
| 4060       | "                 | 1938-39 | 20              | 4.4                | 7.4             | 0.2            | 12.0        | 13                                        | 203                          | 4.21   | 10.85           | 20.2               | 76.0            | 5.8                        | 1,959          | 20.4           | 137.4                       | 4.8                    | 1,959      | 21.0    | 12.1            | 12.1                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 32           |
| 494        | Wagad 8"          | 1929-30 | 14              | 5.4                | 7.0             | 0.2            | 12.6        | 10                                        | 194                          | 5.74   | 15.08           | 14.3               | 92.4            | 4.8                        | 1,321          | 14.2           | 159.4                       | 3.2                    | 1,321      | 14.8    | 12.5            | 11.2                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 15           |
| 1008       | "                 | 1930-31 | 14              | 7.8                | 8.3             | 0.2            | 16.1        | 23                                        | 102                          | 5.21   | 15.08           | 14.3               | 92.4            | 4.8                        | 1,321          | 14.2           | 159.4                       | 3.2                    | 1,321      | 14.8    | 12.5            | 11.2                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 15           |
| 1300       | "                 | 1931-32 | 14              | 10.4               | 8.3             | 0.2            | 18.7        | 18                                        | 106                          | 4.68   | 15.08           | 14.3               | 92.4            | 4.8                        | 1,321          | 14.2           | 159.4                       | 3.2                    | 1,321      | 14.8    | 12.5            | 11.2                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 15           |
| 2074       | "                 | 1932-33 | 14              | 7.8                | 8.3             | 0.2            | 16.1        | 23                                        | 102                          | 5.21   | 15.08           | 14.3               | 92.4            | 4.8                        | 1,321          | 14.2           | 159.4                       | 3.2                    | 1,321      | 14.8    | 12.5            | 11.2                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 15           |
| 2254       | "                 | 1933-34 | 14              | 9.4                | 8.3             | 0.2            | 17.7        | 18                                        | 102                          | 5.21   | 15.08           | 14.3               | 92.4            | 4.8                        | 1,321          | 14.2           | 159.4                       | 3.2                    | 1,321      | 14.8    | 12.5            | 11.2                   | 1.0                          | 1.0                        | 1.0                   | 1.0            | 1.0                         | 1.0               | 89             | 86                     | 15           |
| 2650       | "                 | 1934-35 | 14              | 8.0                | 8.4             | 0.2            | 16.4        | 18                                        | 102                          | 5.21   | 15.08           | 14.3               | 92.4            | 4.8                        | 1,321          | 14.2           | 159.4                       | 3.2                    | 1,321      | 14.8    | 12.5            | 11.2                   | 1.0                          | 1.0.                       |                       |                |                             |                   |                |                        |              |

| Sample No.  | Cotton. | WASH PERCENTAGES. |         |                 |                 | RING FRAME PARTICULARS.* |             |                                           |                             | YARN TEST RESULTS. |                 |                 |                  |                |                |                            |                       |            |                 | RELATIVE HUMIDITY (%) |                 | Highest Standard Warp Counts |                   |                      |                |                              |                 |                |                        |                 |                 |               |                  |                      |               |                              |                 |                |                        |
|-------------|---------|-------------------|---------|-----------------|-----------------|--------------------------|-------------|-------------------------------------------|-----------------------------|--------------------|-----------------|-----------------|------------------|----------------|----------------|----------------------------|-----------------------|------------|-----------------|-----------------------|-----------------|------------------------------|-------------------|----------------------|----------------|------------------------------|-----------------|----------------|------------------------|-----------------|-----------------|---------------|------------------|----------------------|---------------|------------------------------|-----------------|----------------|------------------------|
|             |         | Counts Nominal.   | Season. | Blow Room Loss. | Card Room Loss. | Spinning Loss.           | Total Loss. | Yarn Breakages per 100 spindles per hour. | Front Roller Speed H. P. M. | Draft.             | Turns per Inch. | LEA.            |                  |                |                | BALISTIC.                  |                       |            |                 | Counts.               | Strength (ozs.) |                              | Irregularity (%). | Weakness Percentage. | Extension (%). | Elasticity Irregularity (%). | Evenness Class. | Neps per Yard. | Turns per Inch Actual. | Spiraling Room. | Spiraling Room. | Tensile Room. |                  |                      |               |                              |                 |                |                        |
|             |         |                   |         |                 |                 |                          |             |                                           |                             |                    |                 | Strength (lbs.) | Irregularity (%) | Count-Strength | Counts Actual. | Work of Impure (Inch-lbs.) | Work Irregularity (%) | Count-Work | Strength (ozs.) |                       |                 |                              |                   |                      |                |                              |                 |                |                        |                 |                 |               | Irregularity (%) | Weakness Percentage. | Extension (%) | Elasticity Irregularity (%). | Evenness Class. | Neps per Yard. | Turns per Inch Actual. |
|             |         |                   |         |                 |                 |                          |             |                                           |                             |                    |                 |                 |                  |                |                |                            |                       |            |                 |                       |                 |                              |                   |                      |                |                              |                 |                |                        |                 |                 |               |                  |                      |               |                              |                 |                |                        |
| P. A. 4 F   | 1928-29 | 20                | 1928-29 | 8.0             | 10.0            | 0.5                      | 18.2        | 57                                        | 175                         | 5.23               | 16.85           | 19.9            | 43.5             | 8.7            | 860            | 19.8                       | 199.7                 | 4.4        | 2192            | 20.2                  | 8.0             | 15.6                         | 0.5               | 7.3                  | 8.7            | 5                            | 4.3             | 16.1           | 83                     | 67              | 70              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1929-30 | 20                | 1929-30 | 9.5             | 11.7            | 0.5                      | 20.5        | 50                                        | 183                         | 5.53               | 10.35           | 19.0            | 53.6             | 10.5           | 1030           | 19.8                       | 199.7                 | 4.4        | 2192            | 20.2                  | 8.0             | 15.6                         | 0.7               | 7.4                  | 8.7            | 5                            | 4.3             | 16.1           | 83                     | 67              | 70              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1930-31 | 20                | 1930-31 | 7.3             | 8.0             | 0.5                      | 15.9        | 84                                        | 194                         | 5.26               | 17.98           | 19.9            | 72.0             | 0.5            | 1433           | 20.0                       | 123.8                 | 3.0        | 2470            | 20.3                  | 9.7             | 15.2                         | 0.0               | 0.0                  | 8.3            | 5                            | 1.1             | 17.1           | 80                     | 72              | 67              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1931-32 | 20                | 1931-32 | 7.7             | 0.0             | 0.0                      | 17.4        | 70                                        | 193                         | 6.16               | 17.98           | 20.0            | 67.0             | 0.0            | 1432           | 19.8                       | 141.0                 | 4.2        | 2804            | 20.3                  | 10.2            | 11.0                         | 0.8               | 8.9                  | 7.8            | 5                            | 0.8             | 17.2           | 83                     | 60              | 73              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1932-33 | 20                | 1932-33 | 8.0             | 9.4             | 0.7                      | 17.8        | 76                                        | 195                         | 5.10               | 17.98           | 19.8            | 80.8             | 4.8            | 1484           | 19.2                       | 156.0                 | 4.8        | 2995            | 19.0                  | 11.8            | 13.5                         | 5.8               | 8.8                  | 8.7            | 4                            | 1.1             | 17.4           | 81                     | 05              | 72              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1933-34 | 20                | 1933-34 | 7.0             | 9.8             | 0.5                      | 17.0        | 65                                        | 196                         | 6.10               | 17.98           | 19.8            | 80.2             | 4.0            | 1488           | 20.0                       | 152.2                 | 4.4        | 3044            | 20.3                  | 11.8            | 12.4                         | 5.8               | 7.8                  | 10.0           | 4                            | 1.2             | 17.4           | 82                     | 70              | 69              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1934-35 | 20                | 1934-35 | 7.3             | 12.8            | 0.4                      | 19.4        | 34                                        | 198                         | 5.13               | 17.98           | 20.7            | 88.3             | 4.4            | 1740           | 19.8                       | 162.2                 | 4.0        | 3212            | 20.0                  | 12.4            | 9.5                          | 1.5               | 7.0                  | 8.2            | 4                            | 2.1             | 17.2           | 83                     | 73              | 77              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1935-36 | 20                | 1935-36 | 7.2             | 10.2            | 0.4                      | 17.0        | 42                                        | 195                         | 5.20               | 17.98           | 20.7            | 84.2             | 4.9            | 1701           | 20.1                       | 143.7                 | 4.0        | 2588            | 20.8                  | 11.4            | 10.0                         | 1.8               | 7.0                  | 7.0            | 3                            | 1.4             | 17.4           | 84                     | 00              | 80              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1936-37 | 20                | 1936-37 | 9.3             | 14.0            | 0.0                      | 22.8        | 18                                        | 209                         | 6.21               | 17.08           | 20.0            | 89.0             | 5.4            | 1792           | 20.0                       | 169.0                 | 5.8        | 3390            | 20.2                  | 12.4            | 11.0                         | 2.8               | 8.2                  | 0.5            | 4                            | 2.1             | 17.2           | 86                     | 30              | 83              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1937-38 | 20                | 1937-38 | 11.8            | 13.2            | 0.4                      | 23.7        | 24                                        | 214                         | 6.10               | 17.08           | 20.2            | 70.7             | 0.4            | 1610           | 20.1                       | 169.5                 | 4.0        | 3326            | 20.0                  | 11.6            | 9.4                          | 2.8               | 8.1                  | 8.4            | 3                            | 2.0             | 17.2           | 86                     | 68              | 83              |               |                  |                      |               |                              |                 |                |                        |
| P. A. 280 F | 1928-29 | 20                | 1928-29 | 10.8            | 13.4            | 0.2                      | 23.0        | 7                                         | 193                         | 4.40               | 16.85           | 20.6            | 80.3             | 5.0            | 1840           | 19.5                       | 156.0                 | 3.0        | 3942            | 20.0                  | 12.8            | 11.5                         | 3.7               | 0.9                  | 8.2            | 3                            | 16.4            | 10.2           | 84                     | 66              | 08              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1929-30 | 20                | 1929-30 | 7.5             | 11.7            | 0.2                      | 18.5        | 2                                         | 199                         | 4.70               | 16.85           | 10.3            | 100.2            | 7.0            | 2197           | 19.5                       | 156.0                 | 3.0        | 3942            | 10.7                  | 14.2            | 0.2                          | 2.0               | 0.7                  | 8.5            | 3                            | 6.3             | 10.3           | 83                     | 01              | 07              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1930-31 | 20                | 1930-31 | 8.5             | 0.8             | 0.5                      | 17.9        | 3                                         | 197                         | 4.00               | 16.85           | 20.1            | 104.0            | 3.8            | 2143           | 20.4                       | 147.6                 | 4.2        | 3911            | 20.5                  | 13.6            | 0.4                          | 0.5               | 0.8                  | 7.4            | 3                            | 2.5             | 10.1           | 82                     | 63              | 07              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1931-32 | 20                | 1931-32 | 11.0            | 13.2            | 0.6                      | 25.2        | 10                                        | 195                         | 4.00               | 17.98           | 20.4            | 191.2            | 5.4            | 2094           | 20.2                       | 105.2                 | 4.3        | 3337            | 21.1                  | 12.0            | 10.9                         | 1.8               | 7.1                  | 8.3            | 3                            | 8.4             | 17.2           | 81                     | 03              | 05              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1932-33 | 20                | 1932-33 | 19.1            | 11.5            | 0.0                      | 20.9        | 42                                        | 197                         | 4.52               | 17.98           | 20.1            | 111.7            | 3.7            | 2490           | 20.0                       | 139.7                 | 3.2        | 3794            | 20.7                  | 15.4            | 9.7                          | 1.8               | 7.4                  | 8.0            | 3                            | 7.1             | 17.5           | 81                     | 63              | 73              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1933-34 | 20                | 1933-34 | 9.0             | 10.8            | 0.0                      | 19.6        | 4                                         | 198                         | 4.50               | 16.85           | 19.0            | 111.5            | 3.4            | 2210           | 20.4                       | 135.2                 | 4.0        | 3794            | 20.4                  | 13.1            | 6.2                          | 3.2               | 7.4                  | 6.0            | 2                            | 3.0             | 10.2           | 81                     | 04              | 71              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1934-35 | 20                | 1934-35 | 10.0            | 12.7            | 0.5                      | 21.8        | 10                                        | 195                         | 4.40               | 16.85           | 20.2            | 109.2            | 3.6            | 2260           | 20.4                       | 105.2                 | 4.2        | 3370            | 20.1                  | 14.8            | 10.6                         | 3.0               | 7.7                  | 7.9            | 3                            | 5.2             | 10.3           | 80                     | 68              | 68              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1935-36 | 20                | 1935-36 | 10.0            | 12.3            | 0.2                      | 21.2        | 16                                        | 196                         | 4.40               | 16.85           | 19.7            | 178.8            | 3.9            | 2311           | 19.8                       | 178.8                 | 4.3        | 3549            | 20.1                  | 15.3            | 0.6                          | 1.5               | 7.4                  | 0.0            | 3                            | 0.5             | 10.0           | 81                     | 08              | 74              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1936-37 | 20                | 1936-37 | 0.4             | 10.7            | 0.4                      | 10.4        | 10                                        | 194                         | 4.53               | 16.85           | 20.9            | 104.8            | 5.2            | 2150           | 20.3                       | 101.3                 | 4.0        | 3374            | 21.0                  | 13.4            | 10.1                         | 1.8               | 7.0                  | 0.4            | 31                           | 7.0             | 10.5           | 80                     | 04              | 68              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1937-38 | 20                | 1937-38 | 12.3            | 11.7            | 0.5                      | 22.8        | 16                                        | 208                         | 4.32               | 16.85           | 20.5            | 108.0            | 6.0            | 2314           | 20.4                       | 103.6                 | 4.3        | 3397            | 20.0                  | 14.8            | 8.0                          | 1.0               | 7.0                  | 0.8            | 3                            | 4.8             | 10.2           | 86                     | 70              | 67              |               |                  |                      |               |                              |                 |                |                        |
| Moller-1    | 1928-29 | 8                 | 1928-29 | 5.1             | 9.0             | 0.3                      | 14.0        | 5                                         | 182                         | 5.41               | 12.07           | 7.7             | 79.0             | 0.0            | 908            | 7.0                        | 268.4                 | 3.8        | 2941            | 7.9                   | 14.2            | 10.2                         | 10.0              | 10.3                 | 0.1            | 5                            | 1.0             | 12.0           | 84                     | 07              | 08              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1929-30 | 8                 | 1929-30 | 7.5             | 9.2             | 0.5                      | 16.3        | 40                                        | 195                         | 4.12               | 12.07           | 7.8             | 93.1             | 7.2            | 728            | 7.0                        | 268.4                 | 3.8        | 2941            | 8.1                   | 14.0            | 15.8                         | 11.2              | 0.7                  | 8.6            | 5                            | 1.2             | 11.0           | 84                     | 08              | 03              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1930-31 | 8                 | 1930-31 | 6.8             | 7.7             | 0.5                      | 14.6        | 27                                        | 200                         | 4.44               | 12.07           | 8.2             | 106.3            | 0.4            | 872            | 8.2                        | 237.0                 | 4.1        | 2107            | 8.2                   | 10.0            | 15.2                         | 9.7               | 10.2                 | 8.8            | 3                            | 0.8             | 11.4           | 82                     | 00              | 03              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1931-32 | 8                 | 1931-32 | 10.3            | 11.8            | 0.6                      | 21.4        | 10                                        | 190                         | 4.60               | 12.07           | 8.0             | 101.3            | 0.4            | 834            | 8.0                        | 277.0                 | 2.8        | 2921            | 8.2                   | 15.0            | 15.5                         | 11.5              | 0.8                  | 8.7            | 4                            | 0.6             | 11.6           | 80                     | 63              | 08              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1932-33 | 8                 | 1932-33 | 7.0             | 9.9             | 0.0                      | 10.6        | 33                                        | 204                         | 4.04               | 12.07           | 8.1             | 93.8             | 5.4            | 1004           | 8.1                        | 318.8                 | 3.4        | 2542            | 8.2                   | 18.8            | 12.1                         | 4.8               | 11.2                 | 8.4            | 4                            | 0.6             | 11.7           | 82                     | 67              | 73              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1933-34 | 8                 | 1933-34 | 6.9             | 11.4            | 0.0                      | 17.9        | 33                                        | 204                         | 4.40               | 12.07           | 8.0             | 104.0            | 7.0            | 800            | 8.0                        | 298.0                 | 3.4        | 2589            | 8.3                   | 15.0            | 14.0                         | 7.5               | 11.0                 | 9.3            | 3                            | 0.4             | 11.8           | 82                     | 07              | 70              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1934-35 | 8                 | 1934-35 | 7.8             | 12.8            | 0.4                      | 19.9        | 82                                        | 210                         | 4.90               | 12.07           | 8.0             | 117.0            | 0.8            | 936            | 7.8                        | 324.0                 | 3.2        | 2543            | 8.1                   | 18.4            | 11.1                         | 3.5               | 10.7                 | 7.8            | 3                            | 0.4             | 11.8           | 80                     | 06              | 70              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1935-36 | 8                 | 1935-36 | 5.6             | 10.4            | 0.2                      | 15.6        | 23                                        | 204                         | 4.63               | 12.07           | 8.3             | 106.0            | 7.0            | 884            | 8.2                        | 336.8                 | 3.0        | 2751            | 8.1                   | 16.4            | 13.4                         | 0.2               | 10.4                 | 7.8            | 4                            | 0.8             | 11.7           | 81                     | 70              | 67              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1936-37 | 8                 | 1936-37 | 0.0             | 11.8            | 0.0                      | 17.2        | 33                                        | 205                         | 4.70               | 12.07           | 8.3             | 95.0             | 7.2            | 793            | 8.3                        | 392.6                 | 4.4        | 2512            | 8.3                   | 14.7            | 13.8                         | 9.8               | 9.8                  | 0.0            | 31                           | 0.4             | 11.5           | 87                     | 73              | 68              |               |                  |                      |               |                              |                 |                |                        |
| "           | 1937-38 | 8                 | 1937-38 | 11.0            | 8.8             | 0.2                      | 19.1        | 0                                         | 228                         | 4.68               | 12.07           | 8.2             | 128.3            | 5.4            | 1032           | 8.2                        | 336.4                 | 3.2        | 2947            | 8.2                   | 18.5            | 11.0                         | 5.2               | 11.0                 | 0.0            | 3                            | 0.4             | 11.4           | 88                     | 70              | 70              |               |                  |                      |               |                              |                 |                |                        |

\* Diameter of ring frame front roller—1 1/2 inch. Diameter of rings—1 1/2 inch.



TABLE 22. (Contd.)—(c) UNITED PROVINCES, CENTRAL PROVINCES AND HYDERABAD COTTONS.

| (c) UNITED PROVINCES, CENTRAL PROVINCES AND HYDERABAD COTTONS. |              |                          |                 |                 |             |                        |                    |        |                 |                |                 |                            |                |                |                             |                        |            |         |                 |                   |                      |                        |                             |                       |                        |
|----------------------------------------------------------------|--------------|--------------------------|-----------------|-----------------|-------------|------------------------|--------------------|--------|-----------------|----------------|-----------------|----------------------------|----------------|----------------|-----------------------------|------------------------|------------|---------|-----------------|-------------------|----------------------|------------------------|-----------------------------|-----------------------|------------------------|
| Sample No.                                                     | Cotton.      | WASTE PERCENTAGES.       |                 |                 |             |                        |                    |        |                 |                |                 | YARN TEST RESULTS.         |                |                |                             |                        |            |         |                 |                   |                      | RELATIVE HUMIDITY (%). |                             | Highest Standard Warp |                        |
|                                                                |              | RING FRAME PARTICULARS.* |                 |                 |             |                        | DALLENTIC.         |        |                 |                |                 | SINGLE THREAD.             |                |                |                             |                        |            |         |                 |                   |                      | Spiraling Room.        | Testing Room.               |                       |                        |
|                                                                |              | Yarn Breakages per 100   |                 |                 |             |                        | L.S.A.             |        |                 |                |                 | SINGLE THREAD.             |                |                |                             |                        |            |         |                 |                   |                      |                        |                             |                       |                        |
|                                                                |              | Blow Room Loss.          | Card Room Loss. | Spiraling Loss. | Total Loss. | Yarn Breakages per 100 | Front Roller Speed | Draft. | Turns per inch. | Counts Actual. | Strength (lbs.) | Strength Irregularity (%). | Count-Strongth | Counts Actual. | Work of Rupture (inch-lbs.) | Work Irregularity (%). | Count-Work | Counts. | Strength (ozs.) | Irregularity (%). | Weakness Percentage. | Extension (%).         | Extension Irregularity (%). |                       | Turns per inch Actual. |
| 452                                                            | Algarh A. 19 | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 453                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 454                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 455                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 456                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 457                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 458                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 459                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 460                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 461                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 462                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 463                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 464                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 465                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 466                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 467                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 468                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 469                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 470                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 471                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 472                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 473                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 474                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 475                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 476                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 477                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 478                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 479                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 480                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 481                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 482                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 483                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 484                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 485                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 486                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 487                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 488                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 489                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 490                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 491                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 492                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 493                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 494                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 495                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 496                                                            | "            | 3.0                      | 7.0             | 0.3             | 10.3        | 150                    | 180                | 3.7    | 12.07           | 7.0            | 80.7            | 8.0                        | 250            | 8.1            | 217.6                       | 4.4                    | 150        | 8.0     | 10.4            | 18.1              | 18.7                 | 8.0                    | 11.0                        | 11.0                  | 71                     |
| 497                                                            |              |                          |                 |                 |             |                        |                    |        |                 |                |                 |                            |                |                |                             |                        |            |         |                 |                   |                      |                        |                             |                       |                        |

(d) MADRAS COTTONS.

| Sample No. | Cotton.     | Season. | RING FRAME PARTICULARS.* |                 |                |             |                                 | YARN TEST RESULTS.        |        |                 |                |                 |                            |                     |         |                 |                            |                      |                | RELATIVE HUMIDITY (%). |               | HIGHEST STANDARD WARP Counts. |                             |                 |                |                        |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |
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|            |             |         | WASTE PERCENTAGES.       |                 |                |             |                                 | LEA.                      |        |                 |                | SINGLE THREAD.  |                            |                     |         |                 |                            |                      |                | SPLICING ROOM.         | TESTING ROOM. |                               |                             |                 |                |                        |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  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|            |             |         | Blow Room Loss.          | Card Room Loss. | Spinning Loss. | Total Loss. | Yarn Breakages per 100 spindles | Front Roller Speed R.P.M. | Draft. | Turns per Inch. | Counts Actual. | Strength (lbs.) | Strength Irregularity (%). | Count-Work Product. | Counts. | Strength (ozs.) | Strength Irregularity (%). | Weakness Percentage. | Extension (%). |                        |               |                               | Extension Irregularity (%). | Evenness class. | Reps per yard. | Turns per Inch Actual. |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |
|            |             |         |                          |                 |                |             |                                 |                           |        |                 |                |                 |                            |                     |         |                 |                            |                      |                | Counts Nominal.        |               |                               |                             |                 |                |                        |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |
| 505        | Co. 2 (440) | 1928-29 | 20                       | 4.7             | 9.5            | 0.4         | 14.1                            | 101                       | 4.44   | 16.85           | 19.4           | 75.3            | 4.0                        | 1,401               | 10.8    | 110.5           | 3.3                        | 2,188                | 20.3           | 0.0                    | 0.0           | 0.0                           | 0.0                         | 0.0             | 0.0            | 0.0                    | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 |

